

B^\pm

$$I(J^P) = \frac{1}{2}(0^-)$$

Quantum numbers not measured. Values shown are quark-model predictions.

See also the B^\pm/B^0 ADMIXTURE and $B^\pm/B^0/B_s^0/b$ -baryon ADMIXTURE sections.

NODE=S041

NODE=S041

B^\pm MASS

The fit uses m_{B^+} , $(m_{B^0} - m_{B^+})$, and m_{B^0} to determine m_{B^+} , m_{B^0} , and the mass difference.

NODE=S041M

NODE=S041M

| VALUE (MeV) | EVTS | DOCUMENT ID | TECN | COMMENT |
|---|------|-----------------------|----------|-----------------------------------|
| 5279.26 ± 0.17 OUR FIT | | | | |
| [5279.25 ± 0.17 MeV OUR 2012 FIT] | | | | |
| 5279.25 ± 0.26 OUR AVERAGE | | | | |
| 5279.38 ± 0.11 ± 0.33 | | ¹ AAIJ | 12E LHCB | $p\bar{p}$ at 7 TeV |
| 5279.10 ± 0.41 ± 0.36 | | ² ACOSTA | 06 CDF | $p\bar{p}$ at 1.96 TeV |
| 5279.1 ± 0.4 ± 0.4 | 526 | ³ CSORNA | 00 CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 5279.1 ± 1.7 ± 1.4 | 147 | ABE | 96B CDF | $p\bar{p}$ at 1.8 TeV |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| 5278.8 ± 0.54 ± 2.0 | 362 | ALAM | 94 CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 5278.3 ± 0.4 ± 2.0 | | BORTOLETTO92 | CLEO | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 5280.5 ± 1.0 ± 2.0 | | ⁴ ALBRECHT | 90J ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 5275.8 ± 1.3 ± 3.0 | 32 | ALBRECHT | 87C ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 5278.2 ± 1.8 ± 3.0 | 12 | ⁵ ALBRECHT | 87D ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 5278.6 ± 0.8 ± 2.0 | | BEBEK | 87 CLEO | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041M

NEW

SYCLP=A

SYCLP=A

SYCLP=A

SYCLP=A

¹ Uses $B^+ \rightarrow J/\psi K^+$ fully reconstructed decays.

² Uses exclusively reconstructed final states containing a $J/\psi \rightarrow \mu^+\mu^-$ decays.

³ CSORNA 00 uses fully reconstructed 526 $B^+ \rightarrow J/\psi^{(\prime)} K^+$ events and invariant masses without beam constraint.

⁴ ALBRECHT 90J assumes 10580 for $\Upsilon(4S)$ mass. Supersedes ALBRECHT 87C and ALBRECHT 87D.

⁵ Found using fully reconstructed decays with $J/\psi(1S)$. ALBRECHT 87D assume $m_{\Upsilon(4S)} = 10577$ MeV.

NODE=S041M;LINKAGE=AA

NODE=S041M;LINKAGE=AT

NODE=S041M;LINKAGE=N1

NODE=S041M;LINKAGE=BQ

NODE=S041M;LINKAGE=D

B^\pm MEAN LIFE

See $B^\pm/B^0/B_s^0/b$ -baryon ADMIXTURE section for data on B -hadron mean life averaged over species of bottom particles.

"OUR EVALUATION" is an average using rescaled values of the data listed below. The average and rescaling were performed by the Heavy Flavor Averaging Group (HFAG) and are described at <http://www.slac.stanford.edu/xorg/hfag/>. The averaging/rescaling procedure takes into account correlations between the measurements and asymmetric lifetime errors.

NODE=S041T

NODE=S041T

| VALUE (10^{-12} s) | EVTS | DOCUMENT ID | TECN | COMMENT |
|--|------|-----------------------|----------|-----------------------------------|
| 1.641 ± 0.008 OUR EVALUATION | | | | |
| 1.639 ± 0.009 ± 0.009 | | ¹ AALTONEN | 11 CDF | $p\bar{p}$ at 1.96 TeV |
| 1.663 ± 0.023 ± 0.015 | | ² AALTONEN | 11B CDF | $p\bar{p}$ at 1.96 TeV |
| 1.635 ± 0.011 ± 0.011 | | ³ ABE | 05B BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 1.624 ± 0.014 ± 0.018 | | ⁴ ABDALLAH | 04E DLPH | $e^+e^- \rightarrow Z$ |
| 1.636 ± 0.058 ± 0.025 | | ⁵ ACOSTA | 02C CDF | $p\bar{p}$ at 1.8 TeV |
| 1.673 ± 0.032 ± 0.023 | | ⁶ AUBERT | 01F BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 1.648 ± 0.049 ± 0.035 | | ⁷ BARATE | 00R ALEP | $e^+e^- \rightarrow Z$ |
| 1.643 ± 0.037 ± 0.025 | | ⁸ ABBIENDI | 99J OPAL | $e^+e^- \rightarrow Z$ |
| 1.637 ± 0.058 ^{+0.045} _{-0.043} | | ⁷ ABE | 98Q CDF | $p\bar{p}$ at 1.8 TeV |
| 1.66 ± 0.06 ± 0.03 | | ⁸ ACCIARRI | 98S L3 | $e^+e^- \rightarrow Z$ |
| 1.66 ± 0.06 ± 0.05 | | ⁸ ABE | 97J SLD | $e^+e^- \rightarrow Z$ |
| 1.58 ^{+0.21} _{-0.18} ± 0.04 ± 0.03 | 94 | ⁵ BUSKULIC | 96J ALEP | $e^+e^- \rightarrow Z$ |
| 1.61 ± 0.16 ± 0.12 | | ^{7,9} ABREU | 95Q DLPH | $e^+e^- \rightarrow Z$ |
| 1.72 ± 0.08 ± 0.06 | | ¹⁰ ADAM | 95 DLPH | $e^+e^- \rightarrow Z$ |
| 1.52 ± 0.14 ± 0.09 | | ⁷ AKERS | 95T OPAL | $e^+e^- \rightarrow Z$ |

NODE=S041T

→ UNCHECKED ←

OCCUR=3

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | | | |
|---------------------------------|-----|----|----------|-----|------|------------------------|
| 1.695 ± 0.026 ± 0.015 | | 6 | ABE | 02H | BELL | Repl. by ABE 05B |
| 1.68 ± 0.07 ± 0.02 | | 5 | ABE | 98B | CDF | Repl. by ACOSTA 02C |
| 1.56 ± 0.13 ± 0.06 | | 7 | ABE | 96C | CDF | Repl. by ABE 98Q |
| 1.58 ± 0.09 ± 0.03 | | 11 | BUSKULIC | 96J | ALEP | $e^+e^- \rightarrow Z$ |
| 1.58 ± 0.09 ± 0.04 | | 7 | BUSKULIC | 96J | ALEP | Repl. by BARATE 00R |
| 1.70 ± 0.09 | | 12 | ADAM | 95 | DLPH | $e^+e^- \rightarrow Z$ |
| 1.61 ± 0.16 ± 0.05 | 148 | 5 | ABE | 94D | CDF | Repl. by ABE 98B |
| 1.30 +0.33 -0.29 ± 0.16 | 92 | 7 | ABREU | 93D | DLPH | Sup. by ABREU 95Q |
| 1.56 ± 0.19 ± 0.13 | 134 | 10 | ABREU | 93G | DLPH | Sup. by ADAM 95 |
| 1.51 +0.30 +0.12 -0.28 -0.14 | 59 | 7 | ACTON | 93C | OPAL | Sup. by AKERS 95T |
| 1.47 +0.22 +0.15 -0.19 -0.14 | 77 | 7 | BUSKULIC | 93D | ALEP | Sup. by BUSKULIC 96J |

OCCUR=2
OCCUR=2

¹ Measured mean life using fully reconstructed decays ($J/\psi K^{(*)}$).

² Measured using $B^- \rightarrow D^0 \pi^-$ with $D^0 \rightarrow K^- \pi^+$ events that were selected using a silicon vertex trigger.

³ Measurement performed using a combined fit of CP -violation, mixing and lifetimes.

⁴ Measurement performed using an inclusive reconstruction and B flavor identification technique.

⁵ Measured mean life using fully reconstructed decays.

⁶ Events are selected in which one B meson is fully reconstructed while the second B meson is reconstructed inclusively.

⁷ Data analyzed using $D/D^* \ell X$ event vertices.

⁸ Data analyzed using charge of secondary vertex.

⁹ ABREU 95Q assumes $B(B^0 \rightarrow D^{*-} \ell^+ \nu_\ell) = 3.2 \pm 1.7\%$.

¹⁰ Data analyzed using vertex-charge technique to tag B charge.

¹¹ Combined result of $D/D^* \ell X$ analysis and fully reconstructed B analysis.

¹² Combined ABREU 95Q and ADAM 95 result.

NODE=S041T;LINKAGE=AA
NODE=S041T;LINKAGE=AL

NODE=S041T;LINKAGE=AE
NODE=S041T;LINKAGE=AB

NODE=S041T;LINKAGE=CD
NODE=S041T;LINKAGE=FT

NODE=S041T;LINKAGE=C
NODE=S041T;LINKAGE=M

NODE=S041T;LINKAGE=CQ
NODE=S041T;LINKAGE=F

NODE=S041T;LINKAGE=GC
NODE=S041T;LINKAGE=K

B^+ DECAY MODES

NODE=S041210;NODE=S041

B^- modes are charge conjugates of the modes below. Modes which do not identify the charge state of the B are listed in the B^\pm/B^0 ADMIXTURE section.

NODE=S041

The branching fractions listed below assume 50% $B^0 \bar{B}^0$ and 50% $B^+ B^-$ production at the $\Upsilon(4S)$. We have attempted to bring older measurements up to date by rescaling their assumed $\Upsilon(4S)$ production ratio to 50:50 and their assumed D , D_S , D^* , and ψ branching ratios to current values whenever this would affect our averages and best limits significantly.

Indentation is used to indicate a subchannel of a previous reaction. All resonant subchannels have been corrected for resonance branching fractions to the final state so the sum of the subchannel branching fractions can exceed that of the final state.

For inclusive branching fractions, e.g., $B \rightarrow D^\pm$ anything, the values usually are multiplicities, not branching fractions. They can be greater than one.

| Mode | Fraction (Γ_i/Γ) | Scale factor/ Confidence level |
|------|--------------------------------|-----------------------------------|
|------|--------------------------------|-----------------------------------|

Semileptonic and leptonic modes

| | | |
|---------------|---|------------------------------------|
| Γ_1 | $\ell^+ \nu_\ell$ anything | [a] (10.99 ± 0.28) % |
| Γ_2 | $e^+ \nu_e X_c$ | (10.8 ± 0.4) % |
| Γ_3 | $D \ell^+ \nu_\ell$ anything | (9.8 ± 0.7) % |
| Γ_4 | $\bar{D}^0 \ell^+ \nu_\ell$ | [a] (2.23 ± 0.12) % |
| Γ_5 | $\bar{D}^0 \tau^+ \nu_\tau$ | (7.7 ± 2.5) × 10 ⁻³ |
| Γ_6 | $\bar{D}^*(2007)^0 \ell^+ \nu_\ell$ | [a] (5.70 ± 0.19) % |
| Γ_7 | $\bar{D}^*(2007)^0 \tau^+ \nu_\tau$ | (1.88 ± 0.20) % |
| Γ_8 | $D^- \pi^+ \ell^+ \nu_\ell$ | (4.2 ± 0.5) × 10 ⁻³ |
| Γ_9 | $\bar{D}_0^*(2420)^0 \ell^+ \nu_\ell \times$ $B(\bar{D}_0^{*0} \rightarrow D^- \pi^+)$ | (2.5 ± 0.5) × 10 ⁻³ |
| Γ_{10} | $\bar{D}_2^*(2460)^0 \ell^+ \nu_\ell \times$ $B(\bar{D}_2^{*0} \rightarrow D^- \pi^+)$ | (1.53 ± 0.16) × 10 ⁻³ |
| Γ_{11} | $D^{(*)} n \pi \ell^+ \nu_\ell (n \geq 1)$ | (1.87 ± 0.26) % |

NODE=S041;CLUMP=A
DESIG=220

DESIG=473

DESIG=485

DESIG=145

DESIG=498

DESIG=146

DESIG=499

DESIG=418

DESIG=503

DESIG=504

DESIG=505

| | | | | |
|-----------------|--|--|--------|-----------|
| Γ ₁₂ | $D^{*-} \pi^+ \ell^+ \nu_\ell$ | (6.1 ±0.6) × 10 ⁻³ | | DESIG=419 |
| Γ ₁₃ | $\bar{D}_1(2420)^0 \ell^+ \nu_\ell \times$ $B(\bar{D}_1^0 \rightarrow D^{*-} \pi^+)$ | (3.03 ±0.20) × 10 ⁻³ | | DESIG=257 |
| Γ ₁₄ | $\bar{D}'_1(2430)^0 \ell^+ \nu_\ell \times$ $B(\bar{D}'_1^0 \rightarrow D^{*-} \pi^+)$ | (2.7 ±0.6) × 10 ⁻³ | | DESIG=502 |
| Γ ₁₅ | $\bar{D}_2^*(2460)^0 \ell^+ \nu_\ell \times$ $B(\bar{D}_2^{*0} \rightarrow D^{*-} \pi^+)$ | (1.01 ±0.24) × 10 ⁻³ | S=2.0 | DESIG=258 |
| Γ ₁₆ | $D_s^{(*)-} K^+ \ell^+ \nu_\ell$ | (6.1 ±1.0) × 10 ⁻⁴ | | DESIG=616 |
| Γ ₁₇ | $D_s^- K^+ \ell^+ \nu_\ell$ | (3.0 ^{+1.4} _{-1.2}) × 10 ⁻⁴ | | DESIG=600 |
| Γ ₁₈ | $D_s^{*-} K^+ \ell^+ \nu_\ell$ | (2.9 ±1.9) × 10 ⁻⁴ | | DESIG=571 |
| Γ ₁₉ | $\pi^0 \ell^+ \nu_\ell$ | (7.79 ±0.26) × 10 ⁻⁵ | | DESIG=417 |
| Γ ₂₀ | $\pi^0 e^+ \nu_e$ | | | DESIG=138 |
| Γ ₂₁ | $\eta \ell^+ \nu_\ell$ | (3.8 ±0.6) × 10 ⁻⁵ | | DESIG=327 |
| Γ ₂₂ | $\eta' \ell^+ \nu_\ell$ | (2.3 ±0.8) × 10 ⁻⁵ | | DESIG=479 |
| Γ ₂₃ | $\omega \ell^+ \nu_\ell$ | [a] (1.21 ±0.12) × 10 ⁻⁴ | | DESIG=173 |
| Γ ₂₄ | $\omega \mu^+ \nu_\mu$ | | | DESIG=150 |
| Γ ₂₅ | $\rho^0 \ell^+ \nu_\ell$ | [a] (1.07 ±0.13) × 10 ⁻⁴ | | DESIG=174 |
| Γ ₂₆ | $p \bar{p} e^+ \nu_e$ | < 5.2 × 10 ⁻³ | CL=90% | DESIG=319 |
| Γ ₂₇ | $e^+ \nu_e$ | < 9.8 × 10 ⁻⁷ | CL=90% | DESIG=182 |
| Γ ₂₈ | $\mu^+ \nu_\mu$ | < 1.0 × 10 ⁻⁶ | CL=90% | DESIG=183 |
| Γ ₂₉ | $\tau^+ \nu_\tau$ | (1.05 ±0.25) × 10 ⁻⁴ | S=1.1 | DESIG=184 |
| Γ ₃₀ | $\ell^+ \nu_\ell \gamma$ | < 1.56 × 10 ⁻⁵ | CL=90% | DESIG=547 |
| Γ ₃₁ | $e^+ \nu_e \gamma$ | < 1.7 × 10 ⁻⁵ | CL=90% | DESIG=234 |
| Γ ₃₂ | $\mu^+ \nu_\mu \gamma$ | < 2.4 × 10 ⁻⁵ | CL=90% | DESIG=235 |

Inclusive modes

| | | | | |
|-----------------|-----------------------|--|--|--------------------------------|
| Γ ₃₃ | $D^0 X$ | (8.6 ±0.7) % | | NODE=S041;CLUMP=J DESIG=380 |
| Γ ₃₄ | $\bar{D}^0 X$ | (79 ±4) % | | DESIG=381 |
| Γ ₃₅ | $D^+ X$ | (2.5 ±0.5) % | | DESIG=382 |
| Γ ₃₆ | $D^- X$ | (9.9 ±1.2) % | | DESIG=383 |
| Γ ₃₇ | $D_s^+ X$ | (7.9 ^{+1.4} _{-1.3}) % | | DESIG=384 |
| Γ ₃₈ | $D_s^- X$ | (1.10 ^{+0.40} _{-0.32}) % | | DESIG=385 |
| Γ ₃₉ | $\Lambda_c^+ X$ | (2.1 ^{+0.9} _{-0.6}) % | | DESIG=386 |
| Γ ₄₀ | $\bar{\Lambda}_c^- X$ | (2.8 ^{+1.1} _{-0.9}) % | | DESIG=387 |
| Γ ₄₁ | $\bar{c} X$ | (97 ±4) % | | DESIG=388 |
| Γ ₄₂ | $c X$ | (23.4 ^{+2.2} _{-1.8}) % | | DESIG=389 |
| Γ ₄₃ | $\bar{c} c X$ | (120 ±6) % | | DESIG=390 |

D, D*, or D_s modes

| | | | | |
|-----------------|------------------------------|---------------------------------------|--------|------------------------------|
| Γ ₄₄ | $\bar{D}^0 \pi^+$ | (4.81 ±0.15) × 10 ⁻³ | | NODE=S041;CLUMP=B DESIG=1 |
| Γ ₄₅ | $D_{CP(+1)} \pi^+$ | [b] (2.20 ±0.26) × 10 ⁻³ | | DESIG=314 |
| Γ ₄₆ | $D_{CP(-1)} \pi^+$ | [b] (2.1 ±0.4) × 10 ⁻³ | | DESIG=315 |
| Γ ₄₇ | $\bar{D}^0 \rho^+$ | (1.34 ±0.18) % | | DESIG=25 |
| Γ ₄₈ | $\bar{D}^0 K^+$ | (3.70 ±0.21) × 10 ⁻⁴ | | DESIG=256 |
| Γ ₄₉ | $D_{CP(+1)} K^+$ | [b] (1.91 ±0.15) × 10 ⁻⁴ | | DESIG=316 |
| Γ ₅₀ | $D_{CP(-1)} K^+$ | [b] (2.00 ±0.20) × 10 ⁻⁴ | | DESIG=317 |
| Γ ₅₁ | $[K^- \pi^+]_D K^+$ | [c] < 2.8 × 10 ⁻⁷ | CL=90% | DESIG=358 |
| Γ ₅₂ | $[K^+ \pi^-]_D K^+$ | [c] < 1.8 × 10 ⁻⁵ | CL=90% | DESIG=359 |
| Γ ₅₃ | $[K^- \pi^+ \pi^0]_D K^+$ | | | DESIG=480 |
| Γ ₅₄ | $[K^+ \pi^- \pi^0]_D K^+$ | | | DESIG=481 |
| Γ ₅₅ | $[K^- \pi^+]_D K^*(892)^+$ | [c] | | DESIG=425 |
| Γ ₅₆ | $[K^+ \pi^-]_D K^*(892)^+$ | [c] | | DESIG=426 |
| Γ ₅₇ | $[K^- \pi^+]_D \pi^+$ | [c] (6.3 ±1.1) × 10 ⁻⁷ | | DESIG=399 |
| Γ ₅₈ | $[K^+ \pi^-]_D \pi^+$ | (1.68 ±0.31) × 10 ⁻⁴ | | DESIG=533 |
| Γ ₅₉ | $[K^- \pi^+]_{(D\pi)} \pi^+$ | | | DESIG=557 |

| | | | | |
|------------------|--|--|--------|-----------|
| Γ ₆₀ | $[K^+ \pi^-]_{(D\pi)} \pi^+$ | | | DESIG=558 |
| Γ ₆₁ | $[K^- \pi^+]_{(D\gamma)} \pi^+$ | | | DESIG=559 |
| Γ ₆₂ | $[K^+ \pi^-]_{(D\gamma)} \pi^+$ | | | DESIG=560 |
| Γ ₆₃ | $[K^- \pi^+]_{(D\pi)} K^+$ | | | DESIG=561 |
| Γ ₆₄ | $[K^+ \pi^-]_{(D\pi)} K^+$ | | | DESIG=562 |
| Γ ₆₅ | $[K^- \pi^+]_{(D\gamma)} K^+$ | | | DESIG=563 |
| Γ ₆₆ | $[K^+ \pi^-]_{(D\gamma)} K^+$ | | | DESIG=564 |
| Γ ₆₇ | $[\pi^+ \pi^- \pi^0]_D K^-$ | (4.6 ± 0.9) × 10 ⁻⁶ | | DESIG=420 |
| Γ ₆₈ | $\bar{D}^0 K^*(892)^+$ | (5.3 ± 0.4) × 10 ⁻⁴ | | DESIG=279 |
| Γ ₆₉ | $D_{CP(-)} K^*(892)^+$ | [b] (2.7 ± 0.8) × 10 ⁻⁴ | | DESIG=423 |
| Γ ₇₀ | $D_{CP(+)} K^*(892)^+$ | [b] (5.8 ± 1.1) × 10 ⁻⁴ | | DESIG=424 |
| Γ ₇₁ | $\bar{D}^0 K^+ \pi^+ \pi^-$ | (5.4 ± 2.2) × 10 ⁻⁴ | | DESIG=601 |
| Γ ₇₂ | $\bar{D}^0 K^+ \bar{K}^0$ | (5.5 ± 1.6) × 10 ⁻⁴ | | DESIG=286 |
| Γ ₇₃ | $\bar{D}^0 K^+ \bar{K}^*(892)^0$ | (7.5 ± 1.7) × 10 ⁻⁴ | | DESIG=288 |
| Γ ₇₄ | $\bar{D}^0 \pi^+ \pi^+ \pi^-$ | (5.7 ± 2.2) × 10 ⁻³ | S=3.6 | DESIG=165 |
| Γ ₇₅ | $\bar{D}^0 \pi^+ \pi^+ \pi^-$ nonresonant | (5 ± 4) × 10 ⁻³ | | DESIG=166 |
| Γ ₇₆ | $\bar{D}^0 \pi^+ \rho^0$ | (4.2 ± 3.0) × 10 ⁻³ | | DESIG=167 |
| Γ ₇₇ | $\bar{D}^0 a_1(1260)^+$ | (4 ± 4) × 10 ⁻³ | | DESIG=168 |
| Γ ₇₈ | $\bar{D}^0 \omega \pi^+$ | (4.1 ± 0.9) × 10 ⁻³ | | DESIG=276 |
| Γ ₇₉ | $D^*(2010)^- \pi^+ \pi^+$ | (1.35 ± 0.22) × 10 ⁻³ | | DESIG=2 |
| Γ ₈₀ | $\bar{D}_1(2420)^0 \pi^+, \bar{D}_1^0 \rightarrow$ $D^*(2010)^- \pi^+$ | (5.3 ± 2.3) × 10 ⁻⁴ | | DESIG=580 |
| Γ ₈₁ | $D^- \pi^+ \pi^+$ | (1.07 ± 0.05) × 10 ⁻³ | | DESIG=14 |
| Γ ₈₂ | $D^+ K^0$ | < 2.9 × 10 ⁻⁶ | CL=90% | DESIG=398 |
| Γ ₈₃ | $D^+ K^{*0}$ | < 1.8 × 10 ⁻⁶ | CL=90% | DESIG=565 |
| Γ ₈₄ | $D^+ \bar{K}^{*0}$ | < 1.4 × 10 ⁻⁶ | CL=90% | DESIG=614 |
| Γ ₈₅ | $\bar{D}^*(2007)^0 \pi^+$ | (5.18 ± 0.26) × 10 ⁻³ | | DESIG=15 |
| Γ ₈₆ | $\bar{D}_{CP(+)}^{*0} \pi^+$ | [d] (2.9 ± 0.7) × 10 ⁻³ | | DESIG=432 |
| Γ ₈₇ | $D_{CP(-)}^{*0} \pi^+$ | [d] (2.6 ± 1.0) × 10 ⁻³ | | DESIG=441 |
| Γ ₈₈ | $\bar{D}^*(2007)^0 \omega \pi^+$ | (4.5 ± 1.2) × 10 ⁻³ | | DESIG=275 |
| Γ ₈₉ | $\bar{D}^*(2007)^0 \rho^+$ | (9.8 ± 1.7) × 10 ⁻³ | | DESIG=169 |
| Γ ₉₀ | $\bar{D}^*(2007)^0 K^+$ | (4.20 ± 0.34) × 10 ⁻⁴ | | DESIG=270 |
| Γ ₉₁ | $\bar{D}_{CP(+)}^{*0} K^+$ | [d] (2.8 ± 0.4) × 10 ⁻⁴ | | DESIG=433 |
| Γ ₉₂ | $\bar{D}_{CP(-)}^{*0} K^+$ | [d] (2.31 ± 0.33) × 10 ⁻⁴ | | DESIG=442 |
| Γ ₉₃ | $\bar{D}^*(2007)^0 K^*(892)^+$ | (8.1 ± 1.4) × 10 ⁻⁴ | | DESIG=280 |
| Γ ₉₄ | $\bar{D}^*(2007)^0 K^+ \bar{K}^0$ | < 1.06 × 10 ⁻³ | CL=90% | DESIG=287 |
| Γ ₉₅ | $\bar{D}^*(2007)^0 K^+ K^*(892)^0$ | (1.5 ± 0.4) × 10 ⁻³ | | DESIG=289 |
| Γ ₉₆ | $\bar{D}^*(2007)^0 \pi^+ \pi^+ \pi^-$ | (1.03 ± 0.12) % | | DESIG=211 |
| Γ ₉₇ | $\bar{D}^*(2007)^0 a_1(1260)^+$ | (1.9 ± 0.5) % | | DESIG=221 |
| Γ ₉₈ | $\bar{D}^*(2007)^0 \pi^- \pi^+ \pi^+ \pi^0$ | (1.8 ± 0.4) % | | DESIG=274 |
| Γ ₉₉ | $\bar{D}^{*0} 3\pi^+ 2\pi^-$ | (5.7 ± 1.2) × 10 ⁻³ | | DESIG=379 |
| Γ ₁₀₀ | $D^*(2010)^+ \pi^0$ | < 3.6 × 10 ⁻⁶ | | DESIG=240 |
| Γ ₁₀₁ | $D^*(2010)^+ K^0$ | < 9.0 × 10 ⁻⁶ | CL=90% | DESIG=269 |
| Γ ₁₀₂ | $D^*(2010)^- \pi^+ \pi^+ \pi^0$ | (1.5 ± 0.7) % | | DESIG=12 |
| Γ ₁₀₃ | $D^*(2010)^- \pi^+ \pi^+ \pi^+ \pi^-$ | (2.6 ± 0.4) × 10 ⁻³ | | DESIG=141 |
| Γ ₁₀₄ | $\bar{D}^{*0} \pi^+$ | [e] (5.9 ± 1.3) × 10 ⁻³ | | DESIG=464 |
| Γ ₁₀₅ | $\bar{D}_1^*(2420)^0 \pi^+$ | (1.5 ± 0.6) × 10 ⁻³ | S=1.3 | DESIG=214 |
| Γ ₁₀₆ | $\bar{D}_1(2420)^0 \pi^+ \times B(\bar{D}_1^0 \rightarrow$ $\bar{D}^0 \pi^+ \pi^-)$ | (2.5 ^{+1.7} _{-1.4}) × 10 ⁻⁴ | S=4.0 | DESIG=443 |
| Γ ₁₀₇ | $\bar{D}_1(2420)^0 \pi^+ \times B(\bar{D}_1^0 \rightarrow$ $\bar{D}^0 \pi^+ \pi^-$ (nonresonant)) | (2.3 ± 1.0) × 10 ⁻⁴ | | DESIG=579 |
| Γ ₁₀₈ | $\bar{D}_2^*(2462)^0 \pi^+$ $\times B(\bar{D}_2^*(2462)^0 \rightarrow D^- \pi^+)$ | (3.5 ± 0.4) × 10 ⁻⁴ | | DESIG=348 |
| Γ ₁₀₉ | $\bar{D}_2^*(2462)^0 \pi^+ \times B(\bar{D}_2^{*0} \rightarrow$ $\bar{D}^0 \pi^- \pi^+)$ | (2.3 ± 1.1) × 10 ⁻⁴ | | DESIG=581 |

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|----------------|--|---|------------------|--------|-----------|
| Γ_{110} | $\bar{D}_2^*(2462)^0 \pi^+ \times B(\bar{D}_2^{*0} \rightarrow \bar{D}^0 \pi^- \pi^+ \text{ (nonresonant)})$ | < 1.7 | $\times 10^{-4}$ | CL=90% | DESIG=583 |
| Γ_{111} | $\bar{D}_2^*(2462)^0 \pi^+ \times B(\bar{D}_2^{*0} \rightarrow D^*(2010)^- \pi^+)$ | (2.2 \pm 1.1) | $\times 10^{-4}$ | | DESIG=582 |
| Γ_{112} | $\bar{D}_0^*(2400)^0 \pi^+ \times B(\bar{D}_0^{*0} \rightarrow D^- \pi^+)$ | (6.4 \pm 1.4) | $\times 10^{-4}$ | | DESIG=349 |
| Γ_{113} | $\bar{D}_1(2421)^0 \pi^+ \times B(\bar{D}_1(2421)^0 \rightarrow D^{*-} \pi^+)$ | (6.8 \pm 1.5) | $\times 10^{-4}$ | | DESIG=350 |
| Γ_{114} | $\bar{D}_2^*(2462)^0 \pi^+ \times B(\bar{D}_2^*(2462)^0 \rightarrow D^{*-} \pi^+)$ | (1.8 \pm 0.5) | $\times 10^{-4}$ | | DESIG=351 |
| Γ_{115} | $\bar{D}'_1(2427)^0 \pi^+ \times B(\bar{D}'_1(2427)^0 \rightarrow D^{*-} \pi^+)$ | (5.0 \pm 1.2) | $\times 10^{-4}$ | | DESIG=352 |
| Γ_{116} | $\bar{D}_1(2420)^0 \pi^+ \times B(\bar{D}_1^0 \rightarrow \bar{D}^{*0} \pi^+ \pi^-)$ | < 6 | $\times 10^{-6}$ | CL=90% | DESIG=444 |
| Γ_{117} | $\bar{D}_1^*(2420)^0 \rho^+$ | < 1.4 | $\times 10^{-3}$ | CL=90% | DESIG=215 |
| Γ_{118} | $\bar{D}_2^*(2460)^0 \pi^+$ | < 1.3 | $\times 10^{-3}$ | CL=90% | DESIG=212 |
| Γ_{119} | $\bar{D}_2^*(2460)^0 \pi^+ \times B(\bar{D}_2^{*0} \rightarrow \bar{D}^{*0} \pi^+ \pi^-)$ | < 2.2 | $\times 10^{-5}$ | CL=90% | DESIG=445 |
| Γ_{120} | $\bar{D}_2^*(2460)^0 \rho^+$ | < 4.7 | $\times 10^{-3}$ | CL=90% | DESIG=213 |
| Γ_{121} | $\bar{D}^0 D_s^+$ | (10.0 \pm 1.7) | $\times 10^{-3}$ | | DESIG=72 |
| Γ_{122} | $D_{s0}(2317)^+ \bar{D}^0 \times B(D_{s0}(2317)^+ \rightarrow D_s^+ \pi^0)$ | (7.3 $\begin{smallmatrix} +2.2 \\ -1.7 \end{smallmatrix}$) | $\times 10^{-4}$ | | DESIG=321 |
| Γ_{123} | $D_{s0}(2317)^+ \bar{D}^0 \times B(D_{s0}(2317)^+ \rightarrow D_s^{*+} \gamma)$ | < 7.6 | $\times 10^{-4}$ | CL=90% | DESIG=391 |
| Γ_{124} | $D_{s0}(2317)^+ \bar{D}^*(2007)^0 \times B(D_{s0}(2317)^+ \rightarrow D_s^+ \pi^0)$ | (9 \pm 7) | $\times 10^{-4}$ | | DESIG=26 |
| Γ_{125} | $D_{sJ}(2457)^+ \bar{D}^0$ | (3.1 $\begin{smallmatrix} +1.0 \\ -0.9 \end{smallmatrix}$) | $\times 10^{-3}$ | | DESIG=322 |
| Γ_{126} | $D_{sJ}(2457)^+ \bar{D}^0 \times B(D_{sJ}(2457)^+ \rightarrow D_s^+ \gamma)$ | (4.6 $\begin{smallmatrix} +1.3 \\ -1.1 \end{smallmatrix}$) | $\times 10^{-4}$ | | DESIG=28 |
| Γ_{127} | $D_{sJ}(2457)^+ \bar{D}^0 \times B(D_{sJ}(2457)^+ \rightarrow D_s^+ \pi^+ \pi^-)$ | < 2.2 | $\times 10^{-4}$ | CL=90% | DESIG=392 |
| Γ_{128} | $D_{sJ}(2457)^+ \bar{D}^0 \times B(D_{sJ}(2457)^+ \rightarrow D_s^+ \pi^0)$ | < 2.7 | $\times 10^{-4}$ | CL=90% | DESIG=393 |
| Γ_{129} | $D_{sJ}(2457)^+ \bar{D}^0 \times B(D_{sJ}(2457)^+ \rightarrow D_s^{*+} \gamma)$ | < 9.8 | $\times 10^{-4}$ | CL=90% | DESIG=394 |
| Γ_{130} | $D_{sJ}(2457)^+ \bar{D}^*(2007)^0$ | (1.20 \pm 0.30) | % | | DESIG=27 |
| Γ_{131} | $D_{sJ}(2457)^+ \bar{D}^*(2007)^0 \times B(D_{sJ}(2457)^+ \rightarrow D_s^+ \gamma)$ | (1.4 $\begin{smallmatrix} +0.7 \\ -0.6 \end{smallmatrix}$) | $\times 10^{-3}$ | | DESIG=29 |
| Γ_{132} | $\bar{D}^0 D_{s1}(2536)^+ \times B(D_{s1}(2536)^+ \rightarrow D^*(2007)^0 K^+ + D^*(2010)^+ K^0)$ | (4.0 \pm 1.0) | $\times 10^{-4}$ | | DESIG=566 |
| Γ_{133} | $\bar{D}^0 D_{s1}(2536)^+ \times B(D_{s1}(2536)^+ \rightarrow D^*(2007)^0 K^+)$ | (2.2 \pm 0.7) | $\times 10^{-4}$ | | DESIG=341 |
| Γ_{134} | $\bar{D}^*(2007)^0 D_{s1}(2536)^+ \times B(D_{s1}(2536)^+ \rightarrow D^*(2007)^0 K^+)$ | (5.5 \pm 1.6) | $\times 10^{-4}$ | | DESIG=342 |
| Γ_{135} | $\bar{D}^0 D_{s1}(2536)^+ \times B(D_{s1}(2536)^+ \rightarrow D^{*+} K^0)$ | (2.3 \pm 1.1) | $\times 10^{-4}$ | | DESIG=482 |
| Γ_{136} | $\bar{D}^0 D_{sJ}(2700)^+ \times B(D_{sJ}(2700)^+ \rightarrow D^0 K^+)$ | (1.13 $\begin{smallmatrix} +0.26 \\ -0.40 \end{smallmatrix}$) | $\times 10^{-3}$ | | DESIG=500 |

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|------------------|--|---|---------------------------|-----------|
| Γ ₁₃₇ | $\bar{D}^{*0} D_{s1}(2536)^+ \times$ $B(D_{s1}(2536)^+ \rightarrow D^{*+} K^0)$ | (3.9 ±2.6) × 10 ⁻⁴ | | DESIG=483 |
| Γ ₁₃₈ | $\bar{D}^{*0} D_{sJ}(2573)^+ \times$ $B(D_{sJ}(2573)^+ \rightarrow D^0 K^+)$ | < 2 | × 10 ⁻⁴ CL=90% | DESIG=343 |
| Γ ₁₃₉ | $\bar{D}^*(2007)^0 D_{sJ}(2573)^+ \times$ $B(D_{sJ}(2573)^+ \rightarrow D^0 K^+)$ | < 5 | × 10 ⁻⁴ CL=90% | DESIG=344 |
| Γ ₁₄₀ | $\bar{D}^0 D_s^{*+}$ | (7.6 ±1.6) × 10 ⁻³ | | DESIG=175 |
| Γ ₁₄₁ | $\bar{D}^*(2007)^0 D_s^+$ | (8.2 ±1.7) × 10 ⁻³ | | DESIG=176 |
| Γ ₁₄₂ | $\bar{D}^*(2007)^0 D_s^{*+}$ | (1.71 ±0.24) % | | DESIG=177 |
| Γ ₁₄₃ | $D_s^{(*)+} \bar{D}^{*0}$ | (2.7 ±1.2) % | | DESIG=264 |
| Γ ₁₄₄ | $\bar{D}^*(2007)^0 D^*(2010)^+$ | (8.1 ±1.7) × 10 ⁻⁴ | | DESIG=259 |
| Γ ₁₄₅ | $\bar{D}^0 D^*(2010)^+ +$ $\bar{D}^*(2007)^0 D^+$ | < 1.30 | % CL=90% | DESIG=260 |
| Γ ₁₄₆ | $\bar{D}^0 D^*(2010)^+$ | (3.9 ±0.5) × 10 ⁻⁴ | | DESIG=438 |
| Γ ₁₄₇ | $\bar{D}^0 D^+$ | (3.8 ±0.4) × 10 ⁻⁴ | | DESIG=261 |
| Γ ₁₄₈ | $\bar{D}^0 D^+ K^0$ | (1.55 ±0.21) × 10 ⁻³ | | DESIG=328 |
| Γ ₁₄₉ | $D^+ \bar{D}^*(2007)^0$ | (6.3 ±1.7) × 10 ⁻⁴ | | DESIG=459 |
| Γ ₁₅₀ | $\bar{D}^*(2007)^0 D^+ K^0$ | (2.1 ±0.5) × 10 ⁻³ | | DESIG=329 |
| Γ ₁₅₁ | $\bar{D}^0 \bar{D}^*(2010)^+ K^0$ | (3.8 ±0.4) × 10 ⁻³ | | DESIG=330 |
| Γ ₁₅₂ | $\bar{D}^*(2007)^0 D^*(2010)^+ K^0$ | (9.2 ±1.2) × 10 ⁻³ | | DESIG=331 |
| Γ ₁₅₃ | $\bar{D}^0 D^0 K^+$ | (1.45 ±0.33) × 10 ⁻³ | S=2.6 | DESIG=332 |
| Γ ₁₅₄ | $\bar{D}^*(2007)^0 D^0 K^+$ | (2.26 ±0.23) × 10 ⁻³ | | DESIG=333 |
| Γ ₁₅₅ | $\bar{D}^0 D^*(2007)^0 K^+$ | (6.3 ±0.5) × 10 ⁻³ | | DESIG=334 |
| Γ ₁₅₆ | $\bar{D}^*(2007)^0 D^*(2007)^0 K^+$ | (1.12 ±0.13) % | | DESIG=335 |
| Γ ₁₅₇ | $D^- D^+ K^+$ | (2.2 ±0.7) × 10 ⁻⁴ | | DESIG=336 |
| Γ ₁₅₈ | $D^- D^*(2010)^+ K^+$ | (6.3 ±1.1) × 10 ⁻⁴ | | DESIG=337 |
| Γ ₁₅₉ | $D^*(2010)^- D^+ K^+$ | (6.0 ±1.3) × 10 ⁻⁴ | | DESIG=338 |
| Γ ₁₆₀ | $D^*(2010)^- D^*(2010)^+ K^+$ | (1.32 ±0.18) × 10 ⁻³ | | DESIG=339 |
| Γ ₁₆₁ | $(\bar{D} + \bar{D}^*)(D + D^*) K$ | (4.05 ±0.30) % | | DESIG=340 |
| Γ ₁₆₂ | $D_s^+ \pi^0$ | (1.6 ±0.5) × 10 ⁻⁵ | | DESIG=192 |
| Γ ₁₆₃ | $D_s^{*+} \pi^0$ | < 2.6 | × 10 ⁻⁴ CL=90% | DESIG=193 |
| Γ ₁₆₄ | $D_s^+ \eta$ | < 4 | × 10 ⁻⁴ CL=90% | DESIG=206 |
| Γ ₁₆₅ | $D_s^{*+} \eta$ | < 6 | × 10 ⁻⁴ CL=90% | DESIG=207 |
| Γ ₁₆₆ | $D_s^+ \rho^0$ | < 3.0 | × 10 ⁻⁴ CL=90% | DESIG=186 |
| Γ ₁₆₇ | $D_s^{*+} \rho^0$ | < 4 | × 10 ⁻⁴ CL=90% | DESIG=188 |
| Γ ₁₆₈ | $D_s^+ \omega$ | < 4 | × 10 ⁻⁴ CL=90% | DESIG=194 |
| Γ ₁₆₉ | $D_s^{*+} \omega$ | < 6 | × 10 ⁻⁴ CL=90% | DESIG=195 |
| Γ ₁₇₀ | $D_s^+ a_1(1260)^0$ | < 1.8 | × 10 ⁻³ CL=90% | DESIG=196 |
| Γ ₁₇₁ | $D_s^{*+} a_1(1260)^0$ | < 1.3 | × 10 ⁻³ CL=90% | DESIG=197 |
| Γ ₁₇₂ | $D_s^+ \phi$ | (1.9 $\begin{smallmatrix} +1.3 \\ -0.8 \end{smallmatrix}$) × 10 ⁻⁶ | | DESIG=198 |
| Γ ₁₇₃ | $D_s^{*+} \phi$ | < 1.2 | × 10 ⁻⁵ CL=90% | DESIG=199 |
| Γ ₁₇₄ | $D_s^+ \bar{K}^0$ | < 8 | × 10 ⁻⁴ CL=90% | DESIG=200 |
| Γ ₁₇₅ | $D_s^{*+} \bar{K}^0$ | < 9 | × 10 ⁻⁴ CL=90% | DESIG=31 |
| Γ ₁₇₆ | $D_s^+ \bar{K}^*(892)^0$ | < 4.4 | × 10 ⁻⁶ CL=90% | DESIG=187 |
| Γ ₁₇₇ | $D_s^+ K^{*0}$ | < 3.5 | × 10 ⁻⁶ CL=90% | DESIG=615 |
| Γ ₁₇₈ | $D_s^{*+} \bar{K}^*(892)^0$ | < 3.5 | × 10 ⁻⁴ CL=90% | DESIG=190 |
| Γ ₁₇₉ | $D_s^- \pi^+ K^+$ | (1.80 ±0.22) × 10 ⁻⁴ | | DESIG=32 |
| Γ ₁₈₀ | $D_s^{*-} \pi^+ K^+$ | (1.45 ±0.24) × 10 ⁻⁴ | | DESIG=33 |
| Γ ₁₈₁ | $D_s^- \pi^+ K^*(892)^+$ | < 5 | × 10 ⁻³ CL=90% | DESIG=34 |
| Γ ₁₈₂ | $D_s^{*-} \pi^+ K^*(892)^+$ | < 7 | × 10 ⁻³ CL=90% | DESIG=35 |
| Γ ₁₈₃ | $D_s^- K^+ K^+$ | (1.1 ±0.4) × 10 ⁻⁵ | | DESIG=525 |
| Γ ₁₈₄ | $D_s^{*-} K^+ K^+$ | < 1.5 | × 10 ⁻⁵ CL=90% | DESIG=526 |

Charmonium modes

NODE=S041;CLUMP=C

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|----------------|--|--|--------|-----------|
| Γ_{185} | $\eta_c K^+$ | (9.6 \pm 1.1) $\times 10^{-4}$ | | DESIG=265 |
| Γ_{186} | $\eta_c K^+, \eta_c \rightarrow K_S^0 K^\mp \pi^\pm$ | (2.7 \pm 0.6) $\times 10^{-5}$ | | DESIG=575 |
| Γ_{187} | $\eta_c K^*(892)^+$ | (1.0 $^{+0.5}_{-0.4}$) $\times 10^{-3}$ | | DESIG=496 |
| Γ_{188} | $\eta_c(2S) K^+$ | (3.4 \pm 1.8) $\times 10^{-4}$ | | DESIG=439 |
| Γ_{189} | $\eta_c(2S) K^+, \eta_c(2S) \rightarrow K_S^0 K^\mp \pi^\pm$ | (3.4 $^{+2.3}_{-1.6}$) $\times 10^{-6}$ | | DESIG=576 |
| Γ_{190} | $h_c(1P) K^+ \times B(h_c(1P) \rightarrow J/\psi \pi^+ \pi^-)$ | < 3.4 $\times 10^{-6}$ | CL=90% | DESIG=434 |
| Γ_{191} | $X(3872) K^+$ | < 3.2 $\times 10^{-4}$ | CL=90% | DESIG=440 |
| Γ_{192} | $X(3872) K^+ \times B(X \rightarrow J/\psi \pi^+ \pi^-)$ | (8.6 \pm 0.8) $\times 10^{-6}$ | | DESIG=320 |
| Γ_{193} | $X(3872) K^+ \times B(X \rightarrow J/\psi \gamma)$ | (2.1 \pm 0.4) $\times 10^{-6}$ | S=1.1 | DESIG=460 |
| Γ_{194} | $X(3872) K^*(892)^+ \times B(X \rightarrow J/\psi \gamma)$ | < 4.8 $\times 10^{-6}$ | CL=90% | DESIG=536 |
| Γ_{195} | $X(3872) K^+ \times B(X \rightarrow \psi(2S) \gamma)$ | (4 \pm 4) $\times 10^{-6}$ | S=2.5 | DESIG=537 |
| Γ_{196} | $X(3872) K^*(892)^+ \times B(X \rightarrow \psi(2S) \gamma)$ | < 2.8 $\times 10^{-5}$ | CL=90% | DESIG=538 |
| Γ_{197} | $X(3872) K^+ \times B(X \rightarrow D^0 \bar{D}^0)$ | < 6.0 $\times 10^{-5}$ | CL=90% | DESIG=363 |
| Γ_{198} | $X(3872) K^+ \times B(X \rightarrow D^+ D^-)$ | < 4.0 $\times 10^{-5}$ | CL=90% | DESIG=364 |
| Γ_{199} | $X(3872) K^+ \times B(X \rightarrow D^0 \bar{D}^0 \pi^0)$ | (1.0 \pm 0.4) $\times 10^{-4}$ | | DESIG=365 |
| Γ_{200} | $X(3872) K^+ \times B(X \rightarrow \bar{D}^{*0} D^0)$ | (8.5 \pm 2.6) $\times 10^{-5}$ | S=1.4 | DESIG=484 |
| Γ_{201} | $X(3872) K^+ \times B(X(3872) \rightarrow J/\psi(1S) \eta)$ | < 7.7 $\times 10^{-6}$ | CL=90% | DESIG=355 |
| Γ_{202} | $X(3872)^+ K^0 \times B(X(3872)^+ \rightarrow J/\psi(1S) \pi^+ \pi^0)$ | [f] < 6.1 $\times 10^{-6}$ | CL=90% | DESIG=402 |
| Γ_{203} | $X(4430)^+ K^0 \times B(X^+ \rightarrow J/\psi \pi^+)$ | < 1.5 $\times 10^{-5}$ | CL=95% | DESIG=534 |
| Γ_{204} | $X(4430)^+ K^0 \times B(X^+ \rightarrow \psi(2S) \pi^+)$ | < 4.7 $\times 10^{-5}$ | CL=95% | DESIG=535 |
| Γ_{205} | $X(4260)^0 K^+ \times B(X^0 \rightarrow J/\psi \pi^+ \pi^-)$ | < 2.9 $\times 10^{-5}$ | CL=95% | DESIG=421 |
| Γ_{206} | $X(3915)^0 K^+ \times B(X^0 \rightarrow J/\psi \gamma)$ | < 1.4 $\times 10^{-5}$ | CL=90% | DESIG=461 |
| Γ_{207} | $Z(3930)^0 K^+ \times B(Z^0 \rightarrow J/\psi \gamma)$ | < 2.5 $\times 10^{-6}$ | CL=90% | DESIG=462 |
| Γ_{208} | $J/\psi(1S) K^+$ | (1.028 \pm 0.031) $\times 10^{-3}$ | | DESIG=3 |
| Γ_{209} | $J/\psi(1S) K^0 \pi^+$ | | | DESIG=612 |
| Γ_{210} | $J/\psi(1S) K^+ \pi^+ \pi^-$ | (8.1 \pm 1.3) $\times 10^{-4}$ | S=2.5 | DESIG=19 |
| Γ_{211} | $J/\psi(1S) K^*(892)^+$ | (1.44 \pm 0.08) $\times 10^{-3}$ | | DESIG=142 |
| Γ_{212} | $J/\psi(1S) K(1270)^+$ | (1.8 \pm 0.5) $\times 10^{-3}$ | | DESIG=271 |
| Γ_{213} | $J/\psi(1S) K(1400)^+$ | < 5 $\times 10^{-4}$ | CL=90% | DESIG=272 |
| Γ_{214} | $J/\psi(1S) \eta K^+$ | (1.08 \pm 0.33) $\times 10^{-4}$ | | DESIG=354 |
| Γ_{215} | $J/\psi(1S) \eta' K^+$ | < 8.8 $\times 10^{-5}$ | CL=90% | DESIG=477 |
| Γ_{216} | $J/\psi(1S) \phi K^+$ | (5.2 \pm 1.7) $\times 10^{-5}$ | S=1.2 | DESIG=268 |
| Γ_{217} | $X(4140) K^+, X \rightarrow J/\psi(1S) \phi$ | < 4 $\times 10^{-6}$ | CL=90% | DESIG=602 |
| Γ_{218} | $X(4274) K^+, X \rightarrow J/\psi(1S) \phi$ | < 4 $\times 10^{-6}$ | CL=90% | DESIG=603 |
| Γ_{219} | $J/\psi(1S) \omega K^+$ | (3.20 $^{+0.60}_{-0.32}$) $\times 10^{-4}$ | | DESIG=528 |
| Γ_{220} | $X(3872) K^+ \times B(X \rightarrow J/\psi \omega)$ | (6.0 \pm 2.2) $\times 10^{-6}$ | | DESIG=556 |
| Γ_{221} | $X(3915) K^+ \times B(X \rightarrow J/\psi \omega)$ | (3.0 $^{+0.9}_{-0.7}$) $\times 10^{-5}$ | | DESIG=555 |
| Γ_{222} | $J/\psi(1S) \pi^+$ | (4.1 \pm 0.4) $\times 10^{-5}$ | S=2.6 | DESIG=222 |
| Γ_{223} | $J/\psi(1S) \rho^+$ | (5.0 \pm 0.8) $\times 10^{-5}$ | | DESIG=226 |
| Γ_{224} | $J/\psi(1S) \pi^+ \pi^0$ nonresonant | < 7.3 $\times 10^{-6}$ | CL=90% | DESIG=478 |

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|------|---|--|------------------|--------|-----------|
| Г225 | $J/\psi(1S) a_1(1260)^+$ | < 1.2 | $\times 10^{-3}$ | CL=90% | DESIG=227 |
| Г226 | $J/\psi(1S) p \bar{\Lambda}$ | (1.18 ± 0.31) | $\times 10^{-5}$ | | DESIG=318 |
| Г227 | $J/\psi(1S) \bar{\Sigma}^0 p$ | < 1.1 | $\times 10^{-5}$ | CL=90% | DESIG=422 |
| Г228 | $J/\psi(1S) D^+$ | < 1.2 | $\times 10^{-4}$ | CL=90% | DESIG=395 |
| Г229 | $J/\psi(1S) \bar{D}^0 \pi^+$ | < 2.5 | $\times 10^{-5}$ | CL=90% | DESIG=396 |
| Г230 | $\psi(2S) \pi^+$ | (2.44 ± 0.30) | $\times 10^{-5}$ | | DESIG=524 |
| Г231 | $\psi(2S) K^+$ | (6.27 ± 0.24) | $\times 10^{-4}$ | | DESIG=20 |
| Г232 | $\psi(2S) K^*(892)^+$ | (6.7 ± 1.4) | $\times 10^{-4}$ | S=1.3 | DESIG=143 |
| Г233 | $\psi(2S) K^0 \pi^+$ | | | | DESIG=613 |
| Г234 | $\psi(2S) K^+ \pi^+ \pi^-$ | (4.3 ± 0.5) | $\times 10^{-4}$ | | DESIG=144 |
| Г235 | $\psi(3770) K^+$ | (4.9 ± 1.3) | $\times 10^{-4}$ | | DESIG=360 |
| Г236 | $\psi(3770) K^+ \times B(\psi \rightarrow D^0 \bar{D}^0)$ | (1.6 ± 0.4) | $\times 10^{-4}$ | S=1.1 | DESIG=361 |
| Г237 | $\psi(3770) K^+ \times B(\psi \rightarrow D^+ D^-)$ | (9.4 ± 3.5) | $\times 10^{-5}$ | | DESIG=362 |
| Г238 | $\chi_{c0} \pi^+ \times B(\chi_{c0} \rightarrow \pi^+ \pi^-)$ | < 1 | $\times 10^{-7}$ | CL=90% | DESIG=409 |
| Г239 | $\chi_{c0}(1P) K^+$ | (1.49 ^{+0.15} _{-0.13}) | $\times 10^{-4}$ | | DESIG=266 |
| Г240 | $\chi_{c0} K^*(892)^+$ | < 2.1 | $\times 10^{-4}$ | CL=90% | DESIG=435 |
| Г241 | $\chi_{c2} \pi^+ \times B(\chi_{c2} \rightarrow \pi^+ \pi^-)$ | < 1 | $\times 10^{-7}$ | CL=90% | DESIG=542 |
| Г242 | $\chi_{c2} K^+$ | (1.1 ± 0.4) | $\times 10^{-5}$ | | DESIG=436 |
| Г243 | $\chi_{c2} K^*(892)^+$ | < 1.2 | $\times 10^{-4}$ | CL=90% | DESIG=437 |
| Г244 | $\chi_{c1}(1P) \pi^+$ | (2.2 ± 0.5) | $\times 10^{-5}$ | | DESIG=468 |
| Г245 | $\chi_{c1}(1P) K^+$ | (4.79 ± 0.23) | $\times 10^{-4}$ | | DESIG=171 |
| Г246 | $\chi_{c1}(1P) K^0 \pi^+$ | | | | DESIG=611 |
| Г247 | $\chi_{c1}(1P) K^*(892)^+$ | (3.0 ± 0.6) | $\times 10^{-4}$ | S=1.1 | DESIG=216 |
| Г248 | $h_c(1P) K^+$ | < 3.8 | $\times 10^{-5}$ | | DESIG=467 |

K or K* modes

| | | | | | |
|------|--|--|------------------|--------|------------------------------|
| Г249 | $K^0 \pi^+$ | (2.38 ± 0.07) | $\times 10^{-5}$ | | NODE=S041;CLUMP=D DESIG=5 |
| Г250 | $K^+ \pi^0$ | (1.29 ± 0.05) | $\times 10^{-5}$ | | DESIG=223 |
| Г251 | $\eta' K^+$ | (7.06 ± 0.25) | $\times 10^{-5}$ | | DESIG=248 |
| Г252 | $\eta' K^*(892)^+$ | (4.8 ^{+1.8} _{-1.6}) | $\times 10^{-6}$ | | DESIG=244 |
| Г253 | $\eta' K_0^*(1430)^+$ | (5.2 ± 2.1) | $\times 10^{-6}$ | | DESIG=552 |
| Г254 | $\eta' K_2^*(1430)^+$ | (2.8 ± 0.5) | $\times 10^{-5}$ | | DESIG=553 |
| Г255 | ηK^+ | (2.4 ± 0.4) | $\times 10^{-6}$ | S=1.7 | DESIG=245 |
| Г256 | $\eta K^*(892)^+$ | (1.93 ± 0.16) | $\times 10^{-5}$ | | DESIG=246 |
| Г257 | $\eta K_0^*(1430)^+$ | (1.8 ± 0.4) | $\times 10^{-5}$ | | DESIG=456 |
| Г258 | $\eta K_2^*(1430)^+$ | (9.1 ± 3.0) | $\times 10^{-6}$ | | DESIG=457 |
| Г259 | $\eta(1295) K^+ \times B(\eta(1295) \rightarrow \eta \pi \pi)$ | (2.9 ^{+0.8} _{-0.7}) | $\times 10^{-6}$ | | DESIG=510 |
| Г260 | $\eta(1405) K^+ \times B(\eta(1405) \rightarrow \eta \pi \pi)$ | < 1.3 | $\times 10^{-6}$ | CL=90% | DESIG=511 |
| Г261 | $\eta(1405) K^+ \times B(\eta(1405) \rightarrow K^* K)$ | < 1.2 | $\times 10^{-6}$ | CL=90% | DESIG=512 |
| Г262 | $\eta(1475) K^+ \times B(\eta(1475) \rightarrow K^* K)$ | (1.38 ^{+0.21} _{-0.18}) | $\times 10^{-5}$ | | DESIG=513 |
| Г263 | $f_1(1285) K^+$ | < 2.0 | $\times 10^{-6}$ | CL=90% | DESIG=514 |
| Г264 | $f_1(1420) K^+ \times B(f_1(1420) \rightarrow \eta \pi \pi)$ | < 2.9 | $\times 10^{-6}$ | CL=90% | DESIG=515 |
| Г265 | $f_1(1420) K^+ \times B(f_1(1420) \rightarrow K^* K)$ | < 4.1 | $\times 10^{-6}$ | CL=90% | DESIG=516 |
| Г266 | $\phi(1680) K^+ \times B(\phi(1680) \rightarrow K^* K)$ | < 3.4 | $\times 10^{-6}$ | CL=90% | DESIG=517 |
| Г267 | $f_0(1500) K^+$ | (3.7 ± 2.2) | $\times 10^{-6}$ | | DESIG=415 |
| Г268 | ωK^+ | (6.7 ± 0.8) | $\times 10^{-6}$ | S=1.8 | DESIG=251 |
| Г269 | $\omega K^*(892)^+$ | < 7.4 | $\times 10^{-6}$ | CL=90% | DESIG=252 |
| Г270 | $\omega(K\pi)_0^{*+}$ | (2.8 ± 0.4) | $\times 10^{-5}$ | | DESIG=530 |
| Г271 | $\omega K_0^*(1430)^+$ | (2.4 ± 0.5) | $\times 10^{-5}$ | | DESIG=531 |
| Г272 | $\omega K_2^*(1430)^+$ | (2.1 ± 0.4) | $\times 10^{-5}$ | | DESIG=532 |

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|------------------|---|-----------------------------|------------------|--------|-----------|
| Γ ₂₇₃ | $a_0(980)^+ K^0 \times B(a_0(980)^+ \rightarrow \eta \pi^+)$ | < 3.9 | $\times 10^{-6}$ | CL=90% | DESIG=378 |
| Γ ₂₇₄ | $a_0(980)^0 K^+ \times B(a_0(980)^0 \rightarrow \eta \pi^0)$ | < 2.5 | $\times 10^{-6}$ | CL=90% | DESIG=377 |
| Γ ₂₇₅ | $K^*(892)^0 \pi^+$ | (1.01 ± 0.09) | $\times 10^{-5}$ | | DESIG=6 |
| Γ ₂₇₆ | $K^*(892)^+ \pi^0$ | (8.2 ± 1.9) | $\times 10^{-6}$ | | DESIG=225 |
| Γ ₂₇₇ | $K^+ \pi^- \pi^+$ | (5.10 ± 0.29) | $\times 10^{-5}$ | | DESIG=282 |
| Γ ₂₇₈ | $K^+ \pi^- \pi^+$ nonresonant | (1.63 $^{+0.21}_{-0.15}$) | $\times 10^{-5}$ | | DESIG=59 |
| Γ ₂₇₉ | $\omega(782) K^+$ | (6 ± 9) | $\times 10^{-6}$ | | DESIG=507 |
| Γ ₂₈₀ | $K^+ f_0(980) \times B(f_0(980) \rightarrow \pi^+ \pi^-)$ | (9.4 $^{+1.0}_{-1.2}$) | $\times 10^{-6}$ | | DESIG=281 |
| Γ ₂₈₁ | $f_2(1270)^0 K^+$ | (1.07 ± 0.27) | $\times 10^{-6}$ | | DESIG=412 |
| Γ ₂₈₂ | $f_0(1370)^0 K^+ \times B(f_0(1370)^0 \rightarrow \pi^+ \pi^-)$ | < 1.07 | $\times 10^{-5}$ | CL=90% | DESIG=413 |
| Γ ₂₈₃ | $\rho^0(1450) K^+ \times B(\rho^0(1450) \rightarrow \pi^+ \pi^-)$ | < 1.17 | $\times 10^{-5}$ | CL=90% | DESIG=414 |
| Γ ₂₈₄ | $f'_2(1525) K^+ \times B(f'_2(1525) \rightarrow \pi^+ \pi^-)$ | < 3.4 | $\times 10^{-6}$ | CL=90% | DESIG=416 |
| Γ ₂₈₅ | $K^+ \rho^0$ | (3.7 ± 0.5) | $\times 10^{-6}$ | | DESIG=7 |
| Γ ₂₈₆ | $K_0^*(1430)^0 \pi^+$ | (4.5 $^{+0.9}_{-0.7}$) | $\times 10^{-5}$ | S=1.5 | DESIG=410 |
| Γ ₂₈₇ | $K_2^*(1430)^0 \pi^+$ | (5.6 $^{+2.2}_{-1.5}$) | $\times 10^{-6}$ | | DESIG=152 |
| Γ ₂₈₈ | $K^*(1410)^0 \pi^+$ | < 4.5 | $\times 10^{-5}$ | CL=90% | DESIG=427 |
| Γ ₂₈₉ | $K^*(1680)^0 \pi^+$ | < 1.2 | $\times 10^{-5}$ | CL=90% | DESIG=411 |
| Γ ₂₉₀ | $K^+ \pi^0 \pi^0$ | (1.62 ± 0.19) | $\times 10^{-5}$ | | DESIG=584 |
| Γ ₂₉₁ | $f_0(980) K^+ \times B(f_0 \rightarrow \pi^0 \pi^0)$ | (2.8 ± 0.8) | $\times 10^{-6}$ | | DESIG=585 |
| Γ ₂₉₂ | $K^- \pi^+ \pi^+$ | < 9.5 | $\times 10^{-7}$ | CL=90% | DESIG=283 |
| Γ ₂₉₃ | $K^- \pi^+ \pi^+$ nonresonant | < 5.6 | $\times 10^{-5}$ | CL=90% | DESIG=229 |
| Γ ₂₉₄ | $K_1(1270)^0 \pi^+$ | < 4.0 | $\times 10^{-5}$ | CL=90% | DESIG=550 |
| Γ ₂₉₅ | $K_1(1400)^0 \pi^+$ | < 3.9 | $\times 10^{-5}$ | CL=90% | DESIG=151 |
| Γ ₂₉₆ | $K^0 \pi^+ \pi^0$ | < 6.6 | $\times 10^{-5}$ | CL=90% | DESIG=305 |
| Γ ₂₉₇ | $K^0 \rho^+$ | (8.0 ± 1.5) | $\times 10^{-6}$ | | DESIG=224 |
| Γ ₂₉₈ | $K^*(892)^+ \pi^+ \pi^-$ | (7.5 ± 1.0) | $\times 10^{-5}$ | | DESIG=163 |
| Γ ₂₉₉ | $K^*(892)^+ \rho^0$ | (4.6 ± 1.1) | $\times 10^{-6}$ | | DESIG=153 |
| Γ ₃₀₀ | $K^*(892)^+ f_0(980)$ | (4.2 ± 0.7) | $\times 10^{-6}$ | | DESIG=455 |
| Γ ₃₀₁ | $a_1^+ K^0$ | (3.5 ± 0.7) | $\times 10^{-5}$ | | DESIG=487 |
| Γ ₃₀₂ | $b_1^+ K^0 \times B(b_1^+ \rightarrow \omega \pi^+)$ | (9.6 ± 1.9) | $\times 10^{-6}$ | | DESIG=508 |
| Γ ₃₀₃ | $K^*(892)^0 \rho^+$ | (9.2 ± 1.5) | $\times 10^{-6}$ | | DESIG=405 |
| Γ ₃₀₄ | $K_1(1400)^+ \rho^0$ | < 7.8 | $\times 10^{-4}$ | CL=90% | DESIG=154 |
| Γ ₃₀₅ | $K_2^*(1430)^+ \rho^0$ | < 1.5 | $\times 10^{-3}$ | CL=90% | DESIG=155 |
| Γ ₃₀₆ | $b_1^0 K^+ \times B(b_1^0 \rightarrow \omega \pi^0)$ | (9.1 ± 2.0) | $\times 10^{-6}$ | | DESIG=491 |
| Γ ₃₀₇ | $b_1^+ K^* \times B(b_1^+ \rightarrow \omega \pi^+)$ | < 5.9 | $\times 10^{-6}$ | CL=90% | DESIG=543 |
| Γ ₃₀₈ | $b_1^0 K^* \times B(b_1^0 \rightarrow \omega \pi^0)$ | < 6.7 | $\times 10^{-6}$ | CL=90% | DESIG=544 |
| Γ ₃₀₉ | $K^+ \bar{K}^0$ | (1.19 ± 0.18) | $\times 10^{-6}$ | | DESIG=241 |
| Γ ₃₁₀ | $\bar{K}^0 K^+ \pi^0$ | < 2.4 | $\times 10^{-5}$ | CL=90% | DESIG=306 |
| Γ ₃₁₁ | $K^+ K_S^0 K_S^0$ | (1.08 ± 0.06) | $\times 10^{-5}$ | | DESIG=323 |
| Γ ₃₁₂ | $f_0(980) K^+, f_0 \rightarrow K_S^0 K_S^0$ | (1.47 ± 0.33) | $\times 10^{-5}$ | | DESIG=597 |
| Γ ₃₁₃ | $f_0(1710) K^+, f_0 \rightarrow K_S^0 K_S^0$ | (4.8 $^{+4.0}_{-2.6}$) | $\times 10^{-7}$ | | DESIG=598 |
| Γ ₃₁₄ | $K^+ K_S^0 K_S^0$ nonresonant | (2.0 ± 0.4) | $\times 10^{-5}$ | | DESIG=599 |
| Γ ₃₁₅ | $K_S^0 K_S^0 \pi^+$ | < 5.1 | $\times 10^{-7}$ | CL=90% | DESIG=324 |
| Γ ₃₁₆ | $K^+ K^- \pi^+$ | (5.0 ± 0.7) | $\times 10^{-6}$ | | DESIG=284 |
| Γ ₃₁₇ | $K^+ K^- \pi^+$ nonresonant | < 7.5 | $\times 10^{-5}$ | CL=90% | DESIG=230 |
| Γ ₃₁₈ | $K^+ \bar{K}^*(892)^0$ | < 1.1 | $\times 10^{-6}$ | CL=90% | DESIG=263 |
| Γ ₃₁₉ | $K^+ \bar{K}_0^*(1430)^0$ | < 2.2 | $\times 10^{-6}$ | CL=90% | DESIG=501 |
| Γ ₃₂₀ | $K^+ K^+ \pi^-$ | < 1.6 | $\times 10^{-7}$ | CL=90% | DESIG=285 |

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|------------------|---|-----------------------------|------------------|--------|-----------|
| Γ ₃₂₁ | $K^+ K^+ \pi^-$ nonresonant | < 8.79 | $\times 10^{-5}$ | CL=90% | DESIG=262 |
| Γ ₃₂₂ | $f'_2(1525) K^+$ | (1.8 ±0.5) | $\times 10^{-6}$ | S=1.1 | DESIG=430 |
| Γ ₃₂₃ | $K^+ f_J(2220)$ | | | | DESIG=326 |
| Γ ₃₂₄ | $K^{*+} \pi^+ K^-$ | < 1.18 | $\times 10^{-5}$ | CL=90% | DESIG=453 |
| Γ ₃₂₅ | $K^*(892)^+ K^*(892)^0$ | (1.2 ±0.5) | $\times 10^{-6}$ | | DESIG=277 |
| Γ ₃₂₆ | $K^{*+} K^+ \pi^-$ | < 6.1 | $\times 10^{-6}$ | CL=90% | DESIG=454 |
| Γ ₃₂₇ | $K^+ K^- K^+$ | (3.40 ±0.14) | $\times 10^{-5}$ | S=1.4 | DESIG=160 |
| Γ ₃₂₈ | $K^+ \phi$ | (8.8 $^{+0.7}_{-0.6}$) | $\times 10^{-6}$ | S=1.1 | DESIG=8 |
| Γ ₃₂₉ | $f_0(980) K^+ \times B(f_0(980) \rightarrow K^+ K^-)$ | (9.4 ±3.2) | $\times 10^{-6}$ | | DESIG=428 |
| Γ ₃₃₀ | $a_2(1320) K^+ \times B(a_2(1320) \rightarrow K^+ K^-)$ | < 1.1 | $\times 10^{-6}$ | CL=90% | DESIG=429 |
| Γ ₃₃₁ | $X_0(1550) K^+ \times B(X_0(1550) \rightarrow K^+ K^-)$ | (4.3 ±0.7) | $\times 10^{-6}$ | | DESIG=450 |
| Γ ₃₃₂ | $\phi(1680) K^+ \times B(\phi(1680) \rightarrow K^+ K^-)$ | < 8 | $\times 10^{-7}$ | CL=90% | DESIG=431 |
| Γ ₃₃₃ | $f_0(1710) K^+ \times B(f_0(1710) \rightarrow K^+ K^-)$ | (1.1 ±0.6) | $\times 10^{-6}$ | | DESIG=449 |
| Γ ₃₃₄ | $K^+ K^- K^+$ nonresonant | (2.38 $^{+0.28}_{-0.50}$) | $\times 10^{-5}$ | | DESIG=231 |
| Γ ₃₃₅ | $K^*(892)^+ K^+ K^-$ | (3.6 ±0.5) | $\times 10^{-5}$ | | DESIG=164 |
| Γ ₃₃₆ | $K^*(892)^+ \phi$ | (10.0 ±2.0) | $\times 10^{-6}$ | S=1.7 | DESIG=156 |
| Γ ₃₃₇ | $\phi(K\pi)_0^{*+}$ | (8.3 ±1.6) | $\times 10^{-6}$ | | DESIG=518 |
| Γ ₃₃₈ | $\phi K_1(1270)^+$ | (6.1 ±1.9) | $\times 10^{-6}$ | | DESIG=519 |
| Γ ₃₃₉ | $\phi K_1(1400)^+$ | < 3.2 | $\times 10^{-6}$ | CL=90% | DESIG=157 |
| Γ ₃₄₀ | $\phi K^*(1410)^+$ | < 4.3 | $\times 10^{-6}$ | CL=90% | DESIG=520 |
| Γ ₃₄₁ | $\phi K_0^*(1430)^+$ | (7.0 ±1.6) | $\times 10^{-6}$ | | DESIG=521 |
| Γ ₃₄₂ | $\phi K_2^*(1430)^+$ | (8.4 ±2.1) | $\times 10^{-6}$ | | DESIG=158 |
| Γ ₃₄₃ | $\phi K_2^*(1770)^+$ | < 1.50 | $\times 10^{-5}$ | CL=90% | DESIG=522 |
| Γ ₃₄₄ | $\phi K_2^*(1820)^+$ | < 1.63 | $\times 10^{-5}$ | CL=90% | DESIG=523 |
| Γ ₃₄₅ | $a_1^+ K^{*0}$ | < 3.6 | $\times 10^{-6}$ | CL=90% | DESIG=554 |
| Γ ₃₄₆ | $K^+ \phi \phi$ | (5.0 ±1.2) | $\times 10^{-6}$ | S=2.3 | DESIG=325 |
| Γ ₃₄₇ | $\eta' \eta' K^+$ | < 2.5 | $\times 10^{-5}$ | CL=90% | DESIG=452 |
| Γ ₃₄₈ | $\omega \phi K^+$ | < 1.9 | $\times 10^{-6}$ | CL=90% | DESIG=540 |
| Γ ₃₄₉ | $X(1812) K^+ \times B(X \rightarrow \omega \phi)$ | < 3.2 | $\times 10^{-7}$ | CL=90% | DESIG=541 |
| Γ ₃₅₀ | $K^*(892)^+ \gamma$ | (4.21 ±0.18) | $\times 10^{-5}$ | | DESIG=9 |
| Γ ₃₅₁ | $K_1(1270)^+ \gamma$ | (4.3 ±1.3) | $\times 10^{-5}$ | | DESIG=53 |
| Γ ₃₅₂ | $\eta K^+ \gamma$ | (7.9 ±0.9) | $\times 10^{-6}$ | | DESIG=403 |
| Γ ₃₅₃ | $\eta' K^+ \gamma$ | (2.9 $^{+1.0}_{-0.9}$) | $\times 10^{-6}$ | | DESIG=451 |
| Γ ₃₅₄ | $\phi K^+ \gamma$ | (2.7 ±0.4) | $\times 10^{-6}$ | S=1.2 | DESIG=347 |
| Γ ₃₅₅ | $K^+ \pi^- \pi^+ \gamma$ | (2.76 ±0.22) | $\times 10^{-5}$ | S=1.2 | DESIG=307 |
| Γ ₃₅₆ | $K^*(892)^0 \pi^+ \gamma$ | (2.0 $^{+0.7}_{-0.6}$) | $\times 10^{-5}$ | | DESIG=308 |
| Γ ₃₅₇ | $K^+ \rho^0 \gamma$ | < 2.0 | $\times 10^{-5}$ | CL=90% | DESIG=309 |
| Γ ₃₅₈ | $K^+ \pi^- \pi^+ \gamma$ nonresonant | < 9.2 | $\times 10^{-6}$ | CL=90% | DESIG=310 |
| Γ ₃₅₉ | $K^0 \pi^+ \pi^0 \gamma$ | (4.6 ±0.5) | $\times 10^{-5}$ | | DESIG=474 |
| Γ ₃₆₀ | $K_1(1400)^+ \gamma$ | < 1.5 | $\times 10^{-5}$ | CL=90% | DESIG=54 |
| Γ ₃₆₁ | $K_2^*(1430)^+ \gamma$ | (1.4 ±0.4) | $\times 10^{-5}$ | | DESIG=55 |
| Γ ₃₆₂ | $K^*(1680)^+ \gamma$ | < 1.9 | $\times 10^{-3}$ | CL=90% | DESIG=56 |
| Γ ₃₆₃ | $K_3^*(1780)^+ \gamma$ | < 3.9 | $\times 10^{-5}$ | CL=90% | DESIG=57 |
| Γ ₃₆₄ | $K_4^*(2045)^+ \gamma$ | < 9.9 | $\times 10^{-3}$ | CL=90% | DESIG=58 |

Light unflavored meson modes

| | | | | NODE=S041;CLUMP=E |
|------------------|--|--|--------|-------------------|
| Γ ₃₆₅ | $\rho^+ \gamma$ | (9.8 ±2.5) × 10 ⁻⁷ | | DESIG=267 |
| Γ ₃₆₆ | $\pi^+ \pi^0$ | (5.5 ±0.4) × 10 ⁻⁶ | S=1.2 | DESIG=16 |
| Γ ₃₆₇ | $\pi^+ \pi^+ \pi^-$ | (1.52 ±0.14) × 10 ⁻⁵ | | DESIG=63 |
| Γ ₃₆₈ | $\rho^0 \pi^+$ | (8.3 ±1.2) × 10 ⁻⁶ | | DESIG=4 |
| Γ ₃₆₉ | $\pi^+ f_0(980) \times B(f_0(980) \rightarrow \pi^+ \pi^-)$ | < 1.5 × 10 ⁻⁶ | CL=90% | DESIG=61 |
| Γ ₃₇₀ | $\pi^+ f_2(1270)$ | (1.6 ^{+0.7} / _{-0.4}) × 10 ⁻⁶ | | DESIG=62 |
| Γ ₃₇₁ | $\rho(1450)^0 \pi^+ \times B(\rho^0 \rightarrow \pi^+ \pi^-)$ | (1.4 ^{+0.6} / _{-0.9}) × 10 ⁻⁶ | | DESIG=406 |
| Γ ₃₇₂ | $f_0(1370) \pi^+ \times B(f_0(1370) \rightarrow \pi^+ \pi^-)$ | < 4.0 × 10 ⁻⁶ | CL=90% | DESIG=407 |
| Γ ₃₇₃ | $f_0(500) \pi^+ \times B(f_0(500) \rightarrow \pi^+ \pi^-)$ | < 4.1 × 10 ⁻⁶ | CL=90% | DESIG=408 |
| Γ ₃₇₄ | $\pi^+ \pi^- \pi^+$ nonresonant | (5.3 ^{+1.5} / _{-1.1}) × 10 ⁻⁶ | | DESIG=228 |
| Γ ₃₇₅ | $\pi^+ \pi^0 \pi^0$ | < 8.9 × 10 ⁻⁴ | CL=90% | DESIG=73 |
| Γ ₃₇₆ | $\rho^+ \pi^0$ | (1.09 ±0.14) × 10 ⁻⁵ | | DESIG=74 |
| Γ ₃₇₇ | $\pi^+ \pi^- \pi^+ \pi^0$ | < 4.0 × 10 ⁻³ | CL=90% | DESIG=75 |
| Γ ₃₇₈ | $\rho^+ \rho^0$ | (2.40 ±0.19) × 10 ⁻⁵ | | DESIG=76 |
| Γ ₃₇₉ | $\rho^+ f_0(980) \times B(f_0(980) \rightarrow \pi^+ \pi^-)$ | < 2.0 × 10 ⁻⁶ | CL=90% | DESIG=458 |
| Γ ₃₈₀ | $a_1(1260)^+ \pi^0$ | (2.6 ±0.7) × 10 ⁻⁵ | | DESIG=77 |
| Γ ₃₈₁ | $a_1(1260)^0 \pi^+$ | (2.0 ±0.6) × 10 ⁻⁵ | | DESIG=78 |
| Γ ₃₈₂ | $\omega \pi^+$ | (6.9 ±0.5) × 10 ⁻⁶ | | DESIG=79 |
| Γ ₃₈₃ | $\omega \rho^+$ | (1.59 ±0.21) × 10 ⁻⁵ | | DESIG=253 |
| Γ ₃₈₄ | $\eta \pi^+$ | (4.02 ±0.27) × 10 ⁻⁶ | | DESIG=80 |
| Γ ₃₈₅ | $\eta \rho^+$ | (7.0 ±2.9) × 10 ⁻⁶ | S=2.8 | DESIG=247 |
| Γ ₃₈₆ | $\eta' \pi^+$ | (2.7 ±0.9) × 10 ⁻⁶ | S=1.9 | DESIG=242 |
| Γ ₃₈₇ | $\eta' \rho^+$ | (9.7 ±2.2) × 10 ⁻⁶ | | DESIG=243 |
| Γ ₃₈₈ | $\phi \pi^+$ | < 2.4 × 10 ⁻⁷ | CL=90% | DESIG=254 |
| Γ ₃₈₉ | $\phi \rho^+$ | < 3.0 × 10 ⁻⁶ | CL=90% | DESIG=255 |
| Γ ₃₉₀ | $a_0(980)^0 \pi^+ \times B(a_0(980)^0 \rightarrow \eta \pi^0)$ | < 5.8 × 10 ⁻⁶ | CL=90% | DESIG=376 |
| Γ ₃₉₁ | $a_0(980)^+ \pi^0 \times B(a_0^+ \rightarrow \eta \pi^+)$ | < 1.4 × 10 ⁻⁶ | CL=90% | DESIG=488 |
| Γ ₃₉₂ | $\pi^+ \pi^+ \pi^+ \pi^- \pi^-$ | < 8.6 × 10 ⁻⁴ | CL=90% | DESIG=81 |
| Γ ₃₉₃ | $\rho^0 a_1(1260)^+$ | < 6.2 × 10 ⁻⁴ | CL=90% | DESIG=17 |
| Γ ₃₉₄ | $\rho^0 a_2(1320)^+$ | < 7.2 × 10 ⁻⁴ | CL=90% | DESIG=18 |
| Γ ₃₉₅ | $b_1^0 \pi^+ \times B(b_1^0 \rightarrow \omega \pi^0)$ | (6.7 ±2.0) × 10 ⁻⁶ | | DESIG=492 |
| Γ ₃₉₆ | $b_1^+ \pi^0 \times B(b_1^+ \rightarrow \omega \pi^+)$ | < 3.3 × 10 ⁻⁶ | CL=90% | DESIG=509 |
| Γ ₃₉₇ | $\pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^0$ | < 6.3 × 10 ⁻³ | CL=90% | DESIG=83 |
| Γ ₃₉₈ | $b_1^+ \rho^0 \times B(b_1^+ \rightarrow \omega \pi^+)$ | < 5.2 × 10 ⁻⁶ | CL=90% | DESIG=545 |
| Γ ₃₉₉ | $a_1(1260)^+ a_1(1260)^0$ | < 1.3 % | CL=90% | DESIG=84 |
| Γ ₄₀₀ | $b_1^0 \rho^+ \times B(b_1^0 \rightarrow \omega \pi^0)$ | < 3.3 × 10 ⁻⁶ | CL=90% | DESIG=546 |

Charged particle (h^\pm) modes

| | | | | NODE=S041;CLUMP=I |
|-------------------------------------|---------------------|---|--------|-------------------|
| $h^\pm = K^\pm \text{ or } \pi^\pm$ | | | | NODE=S041 |
| Γ ₄₀₁ | $h^+ \pi^0$ | (1.6 ^{+0.7} / _{-0.6}) × 10 ⁻⁵ | | DESIG=249 |
| Γ ₄₀₂ | ωh^+ | (1.38 ^{+0.27} / _{-0.24}) × 10 ⁻⁵ | | DESIG=250 |
| Γ ₄₀₃ | $h^+ X^0$ (Familon) | < 4.9 × 10 ⁻⁵ | CL=90% | DESIG=278 |

Baryon modes

NODE=S041;CLUMP=F

| | | | | | |
|------------------|--|--|--------------------|--------|-----------|
| Γ ₄₀₄ | $p\bar{p}\pi^+$ | (1.62 ± 0.20) × 10 ⁻⁶ | | | DESIG=21 |
| Γ ₄₀₅ | $p\bar{p}\pi^+$ nonresonant | < 5.3 | × 10 ⁻⁵ | CL=90% | DESIG=232 |
| Γ ₄₀₆ | $p\bar{p}\pi^+\pi^+\pi^-$ | | | | DESIG=22 |
| Γ ₄₀₇ | $p\bar{p}K^+$ | (5.9 ± 0.5) × 10 ⁻⁶ | | S=1.5 | DESIG=313 |
| Γ ₄₀₈ | $\Theta(1710)^{++}\bar{p} \times$ $B(\Theta(1710)^{++} \rightarrow pK^+)$ | [g] < 9.1 | × 10 ⁻⁸ | CL=90% | DESIG=400 |
| Γ ₄₀₉ | $f_J(2220)K^+ \times B(f_J(2220) \rightarrow$ $p\bar{p})$ | [g] < 4.1 | × 10 ⁻⁷ | CL=90% | DESIG=401 |
| Γ ₄₁₀ | $p\bar{\Lambda}(1520)$ | < 1.5 | × 10 ⁻⁶ | CL=90% | DESIG=397 |
| Γ ₄₁₁ | $p\bar{p}K^+$ nonresonant | < 8.9 | × 10 ⁻⁵ | CL=90% | DESIG=233 |
| Γ ₄₁₂ | $p\bar{p}K^*(892)^+$ | (3.6 ^{+0.8} _{-0.7}) × 10 ⁻⁶ | | | DESIG=353 |
| Γ ₄₁₃ | $f_J(2220)K^{*+} \times B(f_J(2220) \rightarrow$ $p\bar{p})$ | < 7.7 | × 10 ⁻⁷ | CL=90% | DESIG=497 |
| Γ ₄₁₄ | $p\bar{\Lambda}$ | < 3.2 | × 10 ⁻⁷ | CL=90% | DESIG=23 |
| Γ ₄₁₅ | $p\bar{\Lambda}\gamma$ | (2.4 ^{+0.5} _{-0.4}) × 10 ⁻⁶ | | | DESIG=45 |
| Γ ₄₁₆ | $p\bar{\Lambda}\pi^0$ | (3.0 ^{+0.7} _{-0.6}) × 10 ⁻⁶ | | | DESIG=493 |
| Γ ₄₁₇ | $p\bar{\Sigma}(1385)^0$ | < 4.7 | × 10 ⁻⁷ | CL=90% | DESIG=494 |
| Γ ₄₁₈ | $\Delta^+\bar{\Lambda}$ | < 8.2 | × 10 ⁻⁷ | CL=90% | DESIG=495 |
| Γ ₄₁₉ | $p\bar{\Sigma}\gamma$ | < 4.6 | × 10 ⁻⁶ | CL=90% | DESIG=46 |
| Γ ₄₂₀ | $p\bar{\Lambda}\pi^+\pi^-$ | (5.9 ± 1.1) × 10 ⁻⁶ | | | DESIG=24 |
| Γ ₄₂₁ | $p\bar{\Lambda}\rho^0$ | (4.8 ± 0.9) × 10 ⁻⁶ | | | DESIG=548 |
| Γ ₄₂₂ | $p\bar{\Lambda}f_2(1270)$ | (2.0 ± 0.8) × 10 ⁻⁶ | | | DESIG=549 |
| Γ ₄₂₃ | $\Lambda\bar{\Lambda}\pi^+$ | < 9.4 | × 10 ⁻⁷ | CL=90% | DESIG=356 |
| Γ ₄₂₄ | $\Lambda\bar{\Lambda}K^+$ | (3.4 ± 0.6) × 10 ⁻⁶ | | | DESIG=357 |
| Γ ₄₂₅ | $\Lambda\bar{\Lambda}K^{*+}$ | (2.2 ^{+1.2} _{-0.9}) × 10 ⁻⁶ | | | DESIG=539 |
| Γ ₄₂₆ | $\bar{\Delta}^0 p$ | < 1.38 | × 10 ⁻⁶ | CL=90% | DESIG=64 |
| Γ ₄₂₇ | $\Delta^{++}\bar{p}$ | < 1.4 | × 10 ⁻⁷ | CL=90% | DESIG=65 |
| Γ ₄₂₈ | $D^+ p\bar{p}$ | < 1.5 | × 10 ⁻⁵ | CL=90% | DESIG=303 |
| Γ ₄₂₉ | $D^*(2010)^+ p\bar{p}$ | < 1.5 | × 10 ⁻⁵ | CL=90% | DESIG=304 |
| Γ ₄₃₀ | $\bar{D}^0 p\bar{p}\pi^+$ | (3.72 ± 0.27) × 10 ⁻⁴ | | | DESIG=607 |
| Γ ₄₃₁ | $\bar{D}^{*0} p\bar{p}\pi^+$ | (3.73 ± 0.32) × 10 ⁻⁴ | | | DESIG=608 |
| Γ ₄₃₂ | $D^- p\bar{p}\pi^+\pi^-$ | (1.66 ± 0.30) × 10 ⁻⁴ | | | DESIG=609 |
| Γ ₄₃₃ | $D^{*-} p\bar{p}\pi^+\pi^-$ | (1.86 ± 0.25) × 10 ⁻⁴ | | | DESIG=610 |
| Γ ₄₃₄ | $p\bar{\Lambda}^0 \bar{D}^0$ | (1.43 ± 0.32) × 10 ⁻⁵ | | | DESIG=577 |
| Γ ₄₃₅ | $p\bar{\Lambda}^0 \bar{D}^*(2007)^0$ | < 5 | × 10 ⁻⁵ | CL=90% | DESIG=578 |
| Γ ₄₃₆ | $\bar{\Lambda}_c^- p\pi^+$ | (2.8 ± 0.8) × 10 ⁻⁴ | | | DESIG=239 |
| Γ ₄₃₇ | $\bar{\Lambda}_c^- \Delta(1232)^{++}$ | < 1.9 | × 10 ⁻⁵ | CL=90% | DESIG=469 |
| Γ ₄₃₈ | $\bar{\Lambda}_c^- \Delta_X(1600)^{++}$ | (5.9 ± 1.9) × 10 ⁻⁵ | | | DESIG=470 |
| Γ ₄₃₉ | $\bar{\Lambda}_c^- \Delta_X(2420)^{++}$ | (4.7 ± 1.6) × 10 ⁻⁵ | | | DESIG=471 |
| Γ ₄₄₀ | $(\bar{\Lambda}_c^- p)_s \pi^+$ | [h] (3.9 ± 1.3) × 10 ⁻⁵ | | | DESIG=472 |
| Γ ₄₄₁ | $\bar{\Sigma}_c(2520)^0 p$ | < 3 | × 10 ⁻⁶ | CL=90% | DESIG=312 |
| Γ ₄₄₂ | $\bar{\Sigma}_c(2800)^0 p$ | (3.3 ± 1.3) × 10 ⁻⁵ | | | DESIG=529 |
| Γ ₄₄₃ | $\bar{\Lambda}_c^- p\pi^+\pi^0$ | (1.8 ± 0.6) × 10 ⁻³ | | | DESIG=236 |
| Γ ₄₄₄ | $\bar{\Lambda}_c^- p\pi^+\pi^+\pi^-$ | (2.2 ± 0.7) × 10 ⁻³ | | | DESIG=237 |
| Γ ₄₄₅ | $\bar{\Lambda}_c^- p\pi^+\pi^+\pi^-\pi^0$ | < 1.34 | % | CL=90% | DESIG=238 |
| Γ ₄₄₆ | $\Lambda_c^+ \Lambda_c^- K^+$ | (8.7 ± 3.5) × 10 ⁻⁴ | | | DESIG=463 |
| Γ ₄₄₇ | $\bar{\Sigma}_c(2455)^0 p$ | (3.7 ± 1.3) × 10 ⁻⁵ | | | DESIG=311 |
| Γ ₄₄₈ | $\bar{\Sigma}_c(2455)^0 p\pi^0$ | (4.4 ± 1.8) × 10 ⁻⁴ | | | DESIG=67 |
| Γ ₄₄₉ | $\bar{\Sigma}_c(2455)^0 p\pi^-\pi^+$ | (4.4 ± 1.7) × 10 ⁻⁴ | | | DESIG=298 |
| Γ ₄₅₀ | $\bar{\Sigma}_c(2455)^{--} p\pi^+\pi^+$ | (3.0 ± 0.8) × 10 ⁻⁴ | | | DESIG=299 |
| Γ ₄₅₁ | $\bar{\Lambda}_c(2593)^- / \bar{\Lambda}_c(2625)^- p\pi^+$ | < 1.9 | × 10 ⁻⁴ | CL=90% | DESIG=66 |
| Γ ₄₅₂ | $\Xi_c^0 \Lambda_c^+ \times B(\Xi_c^0 \rightarrow \Xi^+ \pi^-)$ | (3.0 ± 1.1) × 10 ⁻⁵ | | | DESIG=465 |
| Γ ₄₅₃ | $\Xi_c^0 \Lambda_c^+ \times B(\Xi_c^0 \rightarrow \Lambda K^+ \pi^-)$ | (2.6 ± 1.1) × 10 ⁻⁵ | | S=1.1 | DESIG=466 |

**Lepton Family number (*LF*) or Lepton number (*L*) or Baryon number (*B*)
violating modes, or/and $\Delta B = 1$ weak neutral current (*B1*) modes**

NODE=S041;CLUMP=G

| | | | | | | | |
|------------------|-------------------------------|------------|-----|-------------------------|--------------------|--------|-----------|
| Γ ₄₅₄ | $\pi^+ \ell^+ \ell^-$ | <i>B1</i> | < | 4.9 | $\times 10^{-8}$ | CL=90% | DESIG=475 |
| Γ ₄₅₅ | $\pi^+ e^+ e^-$ | <i>B1</i> | < | 8.0 | $\times 10^{-8}$ | CL=90% | DESIG=85 |
| Γ ₄₅₆ | $\pi^+ \mu^+ \mu^-$ | <i>B1</i> | (| 2.4 ± 0.6 |) $\times 10^{-8}$ | | DESIG=88 |
| Γ ₄₅₇ | $\pi^+ \nu \bar{\nu}$ | <i>B1</i> | < | 1.0 | $\times 10^{-4}$ | CL=90% | DESIG=404 |
| Γ ₄₅₈ | $K^+ \ell^+ \ell^-$ | <i>B1</i> | [a] | (4.51 ± 0.23) | $\times 10^{-7}$ | S=1.1 | DESIG=345 |
| Γ ₄₅₉ | $K^+ e^+ e^-$ | <i>B1</i> | (| 5.5 ± 0.7 |) $\times 10^{-7}$ | | DESIG=11 |
| Γ ₄₆₀ | $K^+ \mu^+ \mu^-$ | <i>B1</i> | (| 4.49 ± 0.23 |) $\times 10^{-7}$ | S=1.1 | DESIG=10 |
| Γ ₄₆₁ | $K^+ \bar{\nu} \nu$ | <i>B1</i> | < | 1.3 | $\times 10^{-5}$ | CL=90% | DESIG=273 |
| Γ ₄₆₂ | $\rho^+ \nu \bar{\nu}$ | <i>B1</i> | < | 1.5 | $\times 10^{-4}$ | CL=90% | DESIG=489 |
| Γ ₄₆₃ | $K^*(892)^+ \ell^+ \ell^-$ | <i>B1</i> | [a] | (1.29 ± 0.21) | $\times 10^{-6}$ | | DESIG=346 |
| Γ ₄₆₄ | $K^*(892)^+ e^+ e^-$ | <i>B1</i> | (| 1.55 $^{+0.40}_{-0.31}$ |) $\times 10^{-6}$ | | DESIG=161 |
| Γ ₄₆₅ | $K^*(892)^+ \mu^+ \mu^-$ | <i>B1</i> | (| 1.12 ± 0.15 |) $\times 10^{-6}$ | | DESIG=162 |
| Γ ₄₆₆ | $K^*(892)^+ \nu \bar{\nu}$ | <i>B1</i> | < | 8 | $\times 10^{-5}$ | CL=90% | DESIG=490 |
| Γ ₄₆₇ | $\pi^+ e^+ \mu^-$ | <i>LF</i> | < | 6.4 | $\times 10^{-3}$ | CL=90% | DESIG=86 |
| Γ ₄₆₈ | $\pi^+ e^- \mu^+$ | <i>LF</i> | < | 6.4 | $\times 10^{-3}$ | CL=90% | DESIG=87 |
| Γ ₄₆₉ | $\pi^+ e^\pm \mu^\mp$ | <i>LF</i> | < | 1.7 | $\times 10^{-7}$ | CL=90% | DESIG=476 |
| Γ ₄₇₀ | $\pi^+ e^+ \tau^-$ | <i>LF</i> | < | 7.4 | $\times 10^{-5}$ | CL=90% | DESIG=586 |
| Γ ₄₇₁ | $\pi^+ e^- \tau^+$ | <i>LF</i> | < | 2.0 | $\times 10^{-5}$ | CL=90% | DESIG=587 |
| Γ ₄₇₂ | $\pi^+ e^\pm \tau^\mp$ | <i>LF</i> | < | 7.5 | $\times 10^{-5}$ | CL=90% | DESIG=588 |
| Γ ₄₇₃ | $\pi^+ \mu^+ \tau^-$ | <i>LF</i> | < | 6.2 | $\times 10^{-5}$ | CL=90% | DESIG=589 |
| Γ ₄₇₄ | $\pi^+ \mu^- \tau^+$ | <i>LF</i> | < | 4.5 | $\times 10^{-5}$ | CL=90% | DESIG=590 |
| Γ ₄₇₅ | $\pi^+ \mu^\pm \tau^\mp$ | <i>LF</i> | < | 7.2 | $\times 10^{-5}$ | CL=90% | DESIG=591 |
| Γ ₄₇₆ | $K^+ e^+ \mu^-$ | <i>LF</i> | < | 9.1 | $\times 10^{-8}$ | CL=90% | DESIG=89 |
| Γ ₄₇₇ | $K^+ e^- \mu^+$ | <i>LF</i> | < | 1.3 | $\times 10^{-7}$ | CL=90% | DESIG=90 |
| Γ ₄₇₈ | $K^+ e^\pm \mu^\mp$ | <i>LF</i> | < | 9.1 | $\times 10^{-8}$ | CL=90% | DESIG=446 |
| Γ ₄₇₉ | $K^+ e^+ \tau^-$ | <i>LF</i> | < | 4.3 | $\times 10^{-5}$ | CL=90% | DESIG=592 |
| Γ ₄₈₀ | $K^+ e^- \tau^+$ | <i>LF</i> | < | 1.5 | $\times 10^{-5}$ | CL=90% | DESIG=593 |
| Γ ₄₈₁ | $K^+ e^\pm \tau^\mp$ | <i>LF</i> | < | 3.0 | $\times 10^{-5}$ | CL=90% | DESIG=594 |
| Γ ₄₈₂ | $K^+ \mu^+ \tau^-$ | <i>LF</i> | < | 4.5 | $\times 10^{-5}$ | CL=90% | DESIG=595 |
| Γ ₄₈₃ | $K^+ \mu^- \tau^+$ | <i>LF</i> | < | 2.8 | $\times 10^{-5}$ | CL=90% | DESIG=596 |
| Γ ₄₈₄ | $K^+ \mu^\pm \tau^\mp$ | <i>LF</i> | < | 4.8 | $\times 10^{-5}$ | CL=90% | DESIG=486 |
| Γ ₄₈₅ | $K^*(892)^+ e^+ \mu^-$ | <i>LF</i> | < | 1.3 | $\times 10^{-6}$ | CL=90% | DESIG=447 |
| Γ ₄₈₆ | $K^*(892)^+ e^- \mu^+$ | <i>LF</i> | < | 9.9 | $\times 10^{-7}$ | CL=90% | DESIG=448 |
| Γ ₄₈₇ | $K^*(892)^+ e^\pm \mu^\mp$ | <i>LF</i> | < | 1.4 | $\times 10^{-6}$ | CL=90% | DESIG=296 |
| Γ ₄₈₈ | $\pi^- e^+ e^+$ | <i>L</i> | < | 2.3 | $\times 10^{-8}$ | CL=90% | DESIG=91 |
| Γ ₄₈₉ | $\pi^- \mu^+ \mu^+$ | <i>L</i> | < | 1.3 | $\times 10^{-8}$ | CL=95% | DESIG=93 |
| Γ ₄₉₀ | $\pi^- e^+ \mu^+$ | <i>L</i> | < | 1.3 | $\times 10^{-6}$ | CL=90% | DESIG=92 |
| Γ ₄₉₁ | $\rho^- e^+ e^+$ | <i>L</i> | < | 2.6 | $\times 10^{-6}$ | CL=90% | DESIG=291 |
| Γ ₄₉₂ | $\rho^- \mu^+ \mu^+$ | <i>L</i> | < | 5.0 | $\times 10^{-6}$ | CL=90% | DESIG=295 |
| Γ ₄₉₃ | $\rho^- e^+ \mu^+$ | <i>L</i> | < | 3.3 | $\times 10^{-6}$ | CL=90% | DESIG=294 |
| Γ ₄₉₄ | $K^- e^+ e^+$ | <i>L</i> | < | 3.0 | $\times 10^{-8}$ | CL=90% | DESIG=94 |
| Γ ₄₉₅ | $K^- \mu^+ \mu^+$ | <i>L</i> | < | 4.1 | $\times 10^{-8}$ | CL=90% | DESIG=96 |
| Γ ₄₉₆ | $K^- e^+ \mu^+$ | <i>L</i> | < | 2.0 | $\times 10^{-6}$ | CL=90% | DESIG=95 |
| Γ ₄₉₇ | $K^*(892)^- e^+ e^+$ | <i>L</i> | < | 2.8 | $\times 10^{-6}$ | CL=90% | DESIG=290 |
| Γ ₄₉₈ | $K^*(892)^- \mu^+ \mu^+$ | <i>L</i> | < | 8.3 | $\times 10^{-6}$ | CL=90% | DESIG=292 |
| Γ ₄₉₉ | $K^*(892)^- e^+ \mu^+$ | <i>L</i> | < | 4.4 | $\times 10^{-6}$ | CL=90% | DESIG=293 |
| Γ ₅₀₀ | $D^- e^+ e^+$ | <i>L</i> | < | 2.6 | $\times 10^{-6}$ | CL=90% | DESIG=572 |
| Γ ₅₀₁ | $D^- e^+ \mu^+$ | <i>L</i> | < | 1.8 | $\times 10^{-6}$ | CL=90% | DESIG=573 |
| Γ ₅₀₂ | $D^- \mu^+ \mu^+$ | <i>L</i> | < | 6.9 | $\times 10^{-7}$ | CL=95% | DESIG=574 |
| Γ ₅₀₃ | $D^{*-} \mu^+ \mu^+$ | <i>L</i> | < | 2.4 | $\times 10^{-6}$ | CL=95% | DESIG=604 |
| Γ ₅₀₄ | $D_s^- \mu^+ \mu^+$ | <i>L</i> | < | 5.8 | $\times 10^{-7}$ | CL=95% | DESIG=605 |
| Γ ₅₀₅ | $\bar{D}^0 \pi^- \mu^+ \mu^+$ | <i>L</i> | < | 1.5 | $\times 10^{-6}$ | CL=95% | DESIG=606 |
| Γ ₅₀₆ | $\Lambda^0 \mu^+$ | <i>L,B</i> | < | 6 | $\times 10^{-8}$ | CL=90% | DESIG=567 |
| Γ ₅₀₇ | $\Lambda^0 e^+$ | <i>L,B</i> | < | 3.2 | $\times 10^{-8}$ | CL=90% | DESIG=568 |
| Γ ₅₀₈ | $\bar{\Lambda}^0 \mu^+$ | <i>L,B</i> | < | 6 | $\times 10^{-8}$ | CL=90% | DESIG=569 |
| Γ ₅₀₉ | $\bar{\Lambda}^0 e^+$ | <i>L,B</i> | < | 8 | $\times 10^{-8}$ | CL=90% | DESIG=570 |

- [a] An ℓ indicates an e or a μ mode, not a sum over these modes.
 [b] An $CP(\pm 1)$ indicates the $CP=+1$ and $CP=-1$ eigenstates of the $D^0-\bar{D}^0$ system.
 [c] D denotes D^0 or \bar{D}^0 .
 [d] D_{CP+}^{*0} decays into $D^0\pi^0$ with the D^0 reconstructed in CP -even eigenstates K^+K^- and $\pi^+\pi^-$.
 [e] \bar{D}^{**} represents an excited state with mass $2.2 < M < 2.8$ GeV/ c^2 .
 [f] $X(3872)^+$ is a hypothetical charged partner of the $X(3872)$.
 [g] $\Theta(1710)^{++}$ is a possible narrow pentaquark state and $G(2220)$ is a possible glueball resonance.
 [h] $(\bar{\Lambda}_c^- \rho)_s$ denotes a low-mass enhancement near 3.35 GeV/ c^2 .

LINKAGE=DX
 LINKAGE=CPE
 LINKAGE=DD
 LINKAGE=CPD
 LINKAGE=DSZ
 LINKAGE=RX
 LINKAGE=PG
 LINKAGE=LP

CONSTRAINED FIT INFORMATION

An overall fit to 18 branching ratios uses 52 measurements and one constraint to determine 12 parameters. The overall fit has a $\chi^2 = 48.9$ for 41 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients $\langle \delta x_i \delta x_j \rangle / (\delta x_i \cdot \delta x_j)$, in percent, from the fit to the branching fractions, $x_i \equiv \Gamma_i / \Gamma_{\text{total}}$. The fit constrains the x_i whose labels appear in this array to sum to one.

| | | | | | | | | | | |
|-----------|-------|-------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|
| x_7 | 33 | | | | | | | | | |
| x_{44} | 0 | 0 | | | | | | | | |
| x_{74} | 0 | 0 | 8 | | | | | | | |
| x_{106} | 0 | 0 | 1 | 13 | | | | | | |
| x_{208} | 0 | 0 | 0 | 0 | 0 | | | | | |
| x_{211} | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| x_{222} | 0 | 0 | 0 | 0 | 0 | 28 | 0 | | | |
| x_{231} | 0 | 0 | 0 | 0 | 0 | 58 | 0 | 16 | | |
| x_{460} | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 4 | 8 | |
| x_{465} | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 |
| | x_6 | x_7 | x_{44} | x_{74} | x_{106} | x_{208} | x_{211} | x_{222} | x_{231} | x_{460} |

B^+ BRANCHING RATIOS

$\Gamma(\ell^+ \nu_\ell \text{ anything}) / \Gamma_{\text{total}}$

Γ_1 / Γ

"OUR EVALUATION" is an average using rescaled values of the data listed below. The average and rescaling were performed by the Heavy Flavor Averaging Group (HFAG) and are described at <http://www.slac.stanford.edu/xorg/hfag/>. The averaging/rescaling procedure takes into account correlations between the measurements.

| VALUE (units 10^{-2}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----------------------|------|--|
| 10.99 ± 0.28 | OUR EVALUATION | | |
| 10.76 ± 0.32 | OUR AVERAGE | | |
| 11.17 ± 0.25 ± 0.28 | ¹ URQUIJO | 07 | BELL $e^+ e^- \rightarrow \mathcal{T}(4S)$ |
| 10.28 ± 0.26 ± 0.39 | ² AUBERT,B | 06Y | BABR $e^+ e^- \rightarrow \mathcal{T}(4S)$ |
| 10.25 ± 0.57 ± 0.65 | ³ ARTUSO | 97 | CLE2 $e^+ e^- \rightarrow \mathcal{T}(4S)$ |
| 11.15 ± 0.26 ± 0.41 | ⁴ OKABE | 05 | BELL Repl. by URQUIJO 07 |
| 10.1 ± 1.8 ± 1.5 | ATHANAS | 94 | CLE2 Sup. by ARTUSO 97 |

NODE=S041215

NODE=S041S95

NODE=S041S95

NODE=S041S95

→ UNCHECKED ←

¹ URQUIJO 07 report a measurement of $(10.34 \pm 0.23 \pm 0.25)\%$ for the partial branching fraction of $B^+ \rightarrow e^+ \nu_e X_c$ decay with electron energy above 0.6 GeV. We converted the result to $B^+ \rightarrow e^+ \nu_e X$ branching fraction.

² The measurements are obtained for charged and neutral B mesons partial rates of semileptonic decay to electrons with momentum above 0.6 GeV/ c in the B rest frame. The best precision on the ratio is achieved for a momentum threshold of 1.0 GeV: $B(B^+ \rightarrow e^+ \nu_e X) / B(B^0 \rightarrow e^+ \nu_e X) = 1.074 \pm 0.041 \pm 0.026$.

³ ARTUSO 97 uses partial reconstruction of $B \rightarrow D^* \ell \nu_\ell$ and inclusive semileptonic branching ratio from BARISH 96B $(0.1049 \pm 0.0017 \pm 0.0043)$.

⁴ The measurements are obtained for charged and neutral B mesons partial rates of semileptonic decay to electrons with momentum above 0.6 GeV/ c in the B rest frame, and their ratio of $B(B^+ \rightarrow e^+ \nu_e X) / B(B^0 \rightarrow e^+ \nu_e X) = 1.08 \pm 0.05 \pm 0.02$.

NODE=S041S95;LINKAGE=UR

NODE=S041S95;LINKAGE=AE

NODE=S041S95;LINKAGE=B

NODE=S041S95;LINKAGE=OK

$\Gamma(e^+ \nu_e X_c)/\Gamma_{\text{total}}$ Γ_2/Γ VALUE (units 10^{-2})

DOCUMENT ID TECN COMMENT

10.79 ± 0.25 ± 0.27¹ URQUIJO 07 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

¹ Measure the independent B^+ and B^0 partial branching fractions with electron threshold energies of 0.4 GeV.

NODE=S041S00
NODE=S041S00

NODE=S041S00;LINKAGE=UR

 $\Gamma(\bar{D}^0 \ell^+ \nu_\ell)/\Gamma_{\text{total}}$ Γ_4/Γ

“OUR EVALUATION” is an average using rescaled values of the data listed below. The average and rescaling were performed by the Heavy Flavor Averaging Group (HFAG) and are described at <http://www.slac.stanford.edu/xorg/hfag/>. The averaging/rescaling procedure takes into account correlations between the measurements. $\ell = e$ or μ , not sum over e and μ modes.

VALUE

DOCUMENT ID TECN COMMENT

0.0223 ± 0.0012 OUR EVALUATION

[0.0226 ± 0.0011 OUR 2012 EVALUATION]

0.0229 ± 0.0008 OUR AVERAGE

0.0229 ± 0.0008 ± 0.0009

¹ AUBERT 10 BABR $e^+ e^- \rightarrow \Upsilon(4S)$

0.0234 ± 0.0003 ± 0.0013

AUBERT 09A BABR $e^+ e^- \rightarrow \Upsilon(4S)$

0.0221 ± 0.0013 ± 0.0019

² BARTELT 99 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$

0.016 ± 0.006 ± 0.003

³ FULTON 91 CLEO $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.0233 ± 0.0009 ± 0.0009

¹ AUBERT 08Q BABR Repl. by AUBERT 09A

0.0194 ± 0.0015 ± 0.0034

⁴ ATHANAS 97 CLE2 Repl. by BARTELT 99

¹ Uses a fully reconstructed B meson as a tag on the recoil side.

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

³ FULTON 91 assumes equal production of $B^0 \bar{B}^0$ and $B^+ B^-$ at the $\Upsilon(4S)$.

⁴ ATHANAS 97 uses missing energy and missing momentum to reconstruct neutrino.

NODE=S041R68
NODE=S041R68

NODE=S041R68

NEW; → UNCHECKED ←

NODE=S041R68;LINKAGE=BE
NODE=S041R68;LINKAGE=L9
NODE=S041R68;LINKAGE=B
NODE=S041R68;LINKAGE=C $\Gamma(\bar{D}^0 \ell^+ \nu_\ell)/\Gamma(\ell^+ \nu_\ell \text{ anything})$ Γ_4/Γ_1

VALUE

DOCUMENT ID TECN COMMENT

0.255 ± 0.009 ± 0.009¹ AUBERT 10 BABR $e^+ e^- \rightarrow \Upsilon(4S)$

¹ Uses a fully reconstructed B meson on the recoil side.

NODE=S041C62
NODE=S041C62

NODE=S041C62;LINKAGE=AU

 $\Gamma(\bar{D}^0 \ell^+ \nu_\ell)/\Gamma(D \ell^+ \nu_\ell \text{ anything})$ Γ_4/Γ_3

VALUE

DOCUMENT ID TECN COMMENT

0.227 ± 0.014 ± 0.016¹ AUBERT 07AN BABR $e^+ e^- \rightarrow \Upsilon(4S)$

¹ Uses a fully reconstructed B meson on the recoil side.

NODE=S041B04
NODE=S041B04

NODE=S041B04;LINKAGE=AU

 $\Gamma(\bar{D}^0 \tau^+ \nu_\tau)/\Gamma_{\text{total}}$ Γ_5/Γ VALUE (units 10^{-2})

DOCUMENT ID TECN COMMENT

0.77 ± 0.22 ± 0.12¹ BOZEK 10 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.67 ± 0.37 ± 0.13

² AUBERT 08N BABR Repl. by AUBERT 09S

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Uses a fully reconstructed B meson as a tag on the recoil side.

NODE=S041C01
NODE=S041C01NODE=S041C01;LINKAGE=EP
NODE=S041C01;LINKAGE=AU $\Gamma(\bar{D}^0 \tau^+ \nu_\tau)/\Gamma(\bar{D}^0 \ell^+ \nu_\ell)$ Γ_5/Γ_4

VALUE

DOCUMENT ID TECN COMMENT

0.43 ± 0.10 OUR AVERAGE [0.31 ± 0.18 OUR 2012 AVERAGE]**0.429 ± 0.082 ± 0.052**^{1,2} LEES 12D BABR $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.314 ± 0.170 ± 0.049

¹ AUBERT 09S BABR Repl. by LEES 12D

¹ Uses a fully reconstructed B meson as a tag on the recoil side.

² Uses $\tau^+ \rightarrow e^+ \nu_e \bar{\nu}_\tau$ and $\tau^+ \rightarrow \mu^+ \nu_\mu \bar{\nu}_\tau$ and e^+ or μ^+ as ℓ^+ .

NODE=S041C52
NODE=S041C52
NEWNODE=S041C52;LINKAGE=AU
NODE=S041C52;LINKAGE=LE

$$\Gamma(\bar{D}^*(2007)^0 \ell^+ \nu_\ell) / \Gamma_{\text{total}}$$

$$\Gamma_6 / \Gamma$$

"OUR EVALUATION" is an average using rescaled values of the data listed below. The average and rescaling were performed by the Heavy Flavor Averaging Group (HFAG) and are described at <http://www.slac.stanford.edu/xorg/hfag/>. The averaging/rescaling procedure takes into account correlations between the measurements. $\ell = e$ or μ , not sum over e and μ modes.

| VALUE | EVTs | DOCUMENT ID | TECN | COMMENT |
|-------|------|-------------|------|---------|
|-------|------|-------------|------|---------|

0.0570 ± 0.0019 OUR EVALUATION

0.0560 ± 0.0026 OUR FIT Error includes scale factor of 1.5. [0.0559 ± 0.0026 OUR 2012 FIT Scale factor = 1.5]

0.0558 ± 0.0026 OUR AVERAGE Error includes scale factor of 1.5. See the ideogram below.

| | | | | | |
|---|-----|--------------|------|------|------------------------------------|
| 0.0540 ± 0.0002 ± 0.0021 | | AUBERT | 09A | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.0556 ± 0.0008 ± 0.0041 | 1 | AUBERT | 08AT | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.0650 ± 0.0020 ± 0.0043 | 2 | ADAM | 03 | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.066 ± 0.016 ± 0.015 | 3 | ALBRECHT | 92C | ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | | |
| 0.0583 ± 0.0015 ± 0.0030 | | 4 AUBERT | 08Q | BABR | Repl. by AUBERT 09A |
| 0.0650 ± 0.0020 ± 0.0043 | | 5 BRIERE | 02 | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.0513 ± 0.0054 ± 0.0064 | 302 | 6 BARISH | 95 | CLE2 | Repl. by ADAM 03 |
| seen | 398 | 7 SANGHERA | 93 | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.041 ± 0.008 +0.008 -0.009 | | 8 FULTON | 91 | CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.070 ± 0.018 ± 0.014 | | 9 ANTREASYAN | 90B | CBAL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Measured using the dependence of $B^- \rightarrow D^{*0} e^- \bar{\nu}_e$ decay differential rate and the form factor description by CAPRINI 98.

² Simultaneous measurements of both $B^0 \rightarrow D^*(2010)^- \ell \nu$ and $B^+ \rightarrow \bar{D}^*(2007)^0 \ell \nu$.

³ ALBRECHT 92C reports $0.058 \pm 0.014 \pm 0.013$. We rescale using the method described in STONE 94 but with the updated PDG 94 $B(D^0 \rightarrow K^- \pi^+)$. Assumes equal production of $B^0 \bar{B}^0$ and $B^+ B^-$ at the $\Upsilon(4S)$.

⁴ Uses a fully reconstructed B meson as a tag on the recoil side.

⁵ The results are based on the same analysis and data sample reported in ADAM 03.

⁶ BARISH 95 use $B(D^0 \rightarrow K^- \pi^+) = (3.91 \pm 0.08 \pm 0.17)\%$ and $B(D^{*0} \rightarrow D^0 \pi^0) = (63.6 \pm 2.3 \pm 3.3)\%$.

⁷ Combining $\bar{D}^{*0} \ell^+ \nu_\ell$ and $\bar{D}^{*-} \ell^+ \nu_\ell$ SANGHERA 93 test $V-A$ structure and fit the decay angular distributions to obtain $A_{FB} = 3/4 * (\Gamma^- - \Gamma^+) / \Gamma = 0.14 \pm 0.06 \pm 0.03$. Assuming a value of V_{cb} , they measure V , A_1 , and A_2 , the three form factors for the $D^* \ell \nu_\ell$ decay, where results are slightly dependent on model assumptions.

⁸ Assumes equal production of $B^0 \bar{B}^0$ and $B^+ B^-$ at the $\Upsilon(4S)$. Uncorrected for D and D^* branching ratio assumptions.

⁹ ANTREASYAN 90B is average over B and $\bar{D}^*(2010)$ charge states.

NODE=S041R69

NODE=S041R69

NODE=S041R69

→ UNCHECKED ←

NEW

NODE=S041R69;LINKAGE=ER

NODE=S041R69;LINKAGE=DM

NODE=S041R69;LINKAGE=C

NODE=S041R69;LINKAGE=BE

NODE=S041R69;LINKAGE=R6

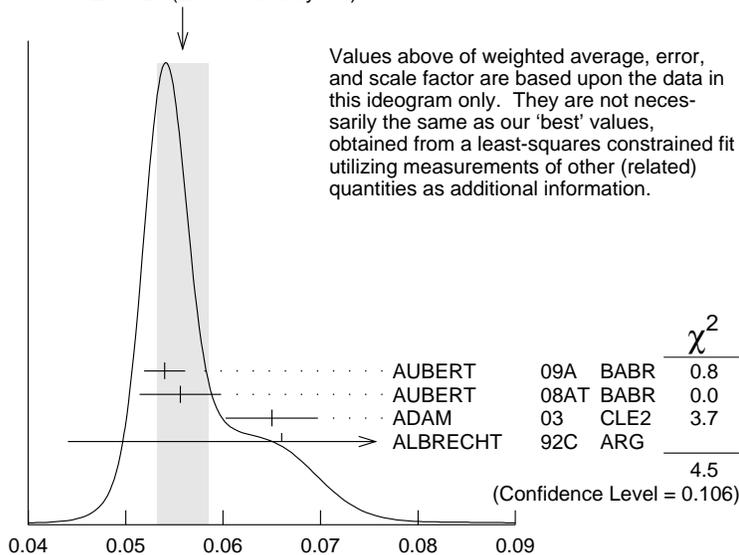
NODE=S041R69;LINKAGE=B1

NODE=S041R69;LINKAGE=A

NODE=S041R69;LINKAGE=B

NODE=S041R69;LINKAGE=62

WEIGHTED AVERAGE
0.0558 ± 0.0026 (Error scaled by 1.5)



$$\Gamma(\bar{D}^*(2007)^0 \ell^+ \nu_\ell) / \Gamma_{\text{total}}$$

$$\Gamma_6 / \Gamma$$

$\Gamma(\bar{D}^*(2007)^0 \ell^+ \nu_\ell) / \Gamma(D \ell^+ \nu_\ell \text{ anything})$ Γ_6 / Γ_3

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------------|---------------------|------|---|
| 0.582 ± 0.018 ± 0.030 | ¹ AUBERT | 07AN | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Uses a fully reconstructed B meson on the recoil side.NODE=S041B05
NODE=S041B05

NODE=S041B05;LINKAGE=AU

 $\Gamma(\bar{D}^*(2007)^0 \tau^+ \nu_\tau) / \Gamma_{\text{total}}$ Γ_7 / Γ

| VALUE (units 10^{-2}) | DOCUMENT ID | TECN | COMMENT |
|----------------------------|-------------|------|---------|
| 1.88 ± 0.20 OUR FIT | | | |

[(2.04 ± 0.30) × 10⁻² OUR 2012 FIT]

| | | | |
|--|--------------------|----|---|
| 2.12^{+0.28}_{-0.27} ± 0.29 | ¹ BOZEK | 10 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--|--------------------|----|---|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|--------------------|---------------------|-----|--------------------------|
| 2.25 ± 0.48 ± 0.28 | ² AUBERT | 08N | BABR Repl. by AUBERT 09s |
|--------------------|---------------------|-----|--------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² Uses a fully reconstructed B meson as a tag on the recoil side.NODE=S041C02
NODE=S041C02

NEW

NODE=S041C02;LINKAGE=EP
NODE=S041C02;LINKAGE=AU $\Gamma(\bar{D}^*(2007)^0 \tau^+ \nu_\tau) / \Gamma(\bar{D}^*(2007)^0 \ell^+ \nu_\ell)$ Γ_7 / Γ_6

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-------------|------|---------|
| 0.335 ± 0.034 OUR FIT | | | |

[0.36 ± 0.05 OUR 2012 FIT]

0.32 ± 0.04 OUR AVERAGE [0.35 ± 0.08 OUR 2012 AVERAGE]

| | | | |
|------------------------------|---------------------|-----|---|
| 0.322 ± 0.032 ± 0.022 | ^{1,2} LEES | 12D | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------------------------------|---------------------|-----|---|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|-----------------------|---------------------|-----|------------------------|
| 0.346 ± 0.073 ± 0.034 | ¹ AUBERT | 09S | BABR Repl. by LEES 12D |
|-----------------------|---------------------|-----|------------------------|

¹ Uses a fully reconstructed B meson as a tag on the recoil side.² Uses $\tau^+ \rightarrow e^+ \nu_e \bar{\nu}_\tau$ and $\tau^+ \rightarrow \mu^+ \nu_\mu \bar{\nu}_\tau$ and e^+ or μ^+ as ℓ^+ .NODE=S041C53
NODE=S041C53

NEW

NEW

NODE=S041C53;LINKAGE=AU

NODE=S041C53;LINKAGE=LE

 $\Gamma(D^- \pi^+ \ell^+ \nu_\ell) / \Gamma_{\text{total}}$ Γ_8 / Γ

| VALUE (units 10^{-3}) | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-------------|------|---------|
| 4.2 ± 0.5 OUR AVERAGE | | | |

| | | | |
|-----------------|---------------------|-----|---|
| 4.2 ± 0.6 ± 0.3 | ¹ AUBERT | 08Q | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------|---------------------|-----|---|

| | | | |
|-----------------|--------------------------|----|---|
| 4.1 ± 0.6 ± 0.2 | ^{1,2} LIVENTSEV | 08 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------|--------------------------|----|---|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|-----------------|------------------------|----|----------------------------|
| 5.5 ± 0.9 ± 0.3 | ³ LIVENTSEV | 05 | BELL Repl. by LIVENTSEV 08 |
|-----------------|------------------------|----|----------------------------|

¹ Uses a fully reconstructed B meson as a tag on the recoil side.² LIVENTSEV 08 reports $(4.0 \pm 0.4 \pm 0.6) \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D^- \pi^+ \ell^+ \nu_\ell) / \Gamma_{\text{total}}] / [B(B^+ \rightarrow \bar{D}^0 \ell^+ \nu_\ell)]$ assuming $B(B^+ \rightarrow \bar{D}^0 \ell^+ \nu_\ell) = (2.15 \pm 0.22) \times 10^{-2}$, which we rescale to our best value $B(B^+ \rightarrow \bar{D}^0 \ell^+ \nu_\ell) = (2.23 \pm 0.12) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.³ LIVENTSEV 05 reports $[\Gamma(B^+ \rightarrow D^- \pi^+ \ell^+ \nu_\ell) / \Gamma_{\text{total}}] / [B(B^0 \rightarrow D^- \ell^+ \nu_\ell)] = 0.25 \pm 0.03 \pm 0.03$ which we multiply by our best value $B(B^0 \rightarrow D^- \ell^+ \nu_\ell) = (2.18 \pm 0.12) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.NODE=S041Q54
NODE=S041Q54

NODE=S041Q54;LINKAGE=BE

NODE=S041Q54;LINKAGE=LV

NODE=S041Q54;LINKAGE=LI

 $\Gamma(\bar{D}_0^*(2420)^0 \ell^+ \nu_\ell \times B(\bar{D}_0^* \rightarrow D^- \pi^+)) / \Gamma_{\text{total}}$ Γ_9 / Γ

| VALUE (units 10^{-3}) | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-------------|------|---------|
| 2.5 ± 0.5 OUR AVERAGE | | | |

| | | | |
|-----------------|---------------------|------|---|
| 2.6 ± 0.5 ± 0.4 | ¹ AUBERT | 08BL | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------|---------------------|------|---|

| | | | |
|-----------------|------------------------|----|---|
| 2.4 ± 0.4 ± 0.6 | ¹ LIVENTSEV | 08 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------|------------------------|----|---|

¹ Uses a fully reconstructed B meson as a tag on the recoil side.NODE=S041C06
NODE=S041C06

NODE=S041C06;LINKAGE=BE

 $\Gamma(\bar{D}_2^*(2460)^0 \ell^+ \nu_\ell \times B(\bar{D}_2^* \rightarrow D^- \pi^+)) / \Gamma_{\text{total}}$ Γ_{10} / Γ

| VALUE (units 10^{-3}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------------|-------------|------|---------|
| 1.53 ± 0.16 OUR AVERAGE | | | |

| | | | |
|--------------------|---------------------|-----|---|
| 1.42 ± 0.15 ± 0.15 | ¹ AUBERT | 09Y | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------|---------------------|-----|---|

| | | | |
|-----------------|---------------------|------|---|
| 1.5 ± 0.2 ± 0.2 | ² AUBERT | 08BL | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------|---------------------|------|---|

| | | | |
|-----------------|------------------------|----|---|
| 2.2 ± 0.3 ± 0.4 | ² LIVENTSEV | 08 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------|------------------------|----|---|

¹ Uses a simultaneous fit of all B semileptonic decays without full reconstruction of events. AUBERT 09Y reports $B(B^+ \rightarrow \bar{D}_2^*(2460)^0 \ell^+ \nu_\ell) \cdot B(\bar{D}_2^*(2460)^0 \rightarrow D^{(*)-} \pi^+) = (2.29 \pm 0.23 \pm 0.21) \times 10^{-3}$ and the authors have provided us the individual measurement.² Uses a fully reconstructed B meson as a tag on the recoil side.NODE=S041C07
NODE=S041C07

NODE=S041C07;LINKAGE=AU

NODE=S041C07;LINKAGE=BE

$\Gamma(D^{(*)}n\pi\ell^+\nu_\ell(n \geq 1))/\Gamma(D\ell^+\nu_\ell\text{anything})$ Γ_{11}/Γ_3

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------------|---------------------|-----------|-----------------------------------|
| 0.191±0.013±0.019 | ¹ AUBERT | 07AN BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B06
 NODE=S041B06

¹ Uses a fully reconstructed B meson on the recoil side.

NODE=S041B06;LINKAGE=AU

 $\Gamma(D^{*-}\pi^+\ell^+\nu_\ell)/\Gamma_{\text{total}}$ Γ_{12}/Γ

| VALUE (units 10^{-3}) | DOCUMENT ID | TECN | COMMENT |
|----------------------------|-------------|------|---------|
| 6.1±0.6 OUR AVERAGE | | | |

NODE=S041Q55
 NODE=S041Q55

5.9±0.5±0.4 ¹ AUBERT 08Q BABR $e^+e^- \rightarrow \Upsilon(4S)$

6.6±1.0±0.4 ^{1,2} LIVENTSEV 08 BELL $e^+e^- \rightarrow \Upsilon(4S)$

••• We do not use the following data for averages, fits, limits, etc. •••

5.9±1.4±0.1 ^{3,4} LIVENTSEV 05 BELL Repl. by LIVENTSEV 08

¹ Uses a fully reconstructed B meson as a tag on the recoil side.

NODE=S041Q55;LINKAGE=BE
 NODE=S041Q55;LINKAGE=LV

² LIVENTSEV 08 reports $(6.4 \pm 0.8 \pm 0.9) \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D^{*-}\pi^+\ell^+\nu_\ell)/\Gamma_{\text{total}}] / [B(B^+ \rightarrow \bar{D}^0\ell^+\nu_\ell)]$ assuming $B(B^+ \rightarrow \bar{D}^0\ell^+\nu_\ell) = (2.15 \pm 0.22) \times 10^{-2}$, which we rescale to our best value $B(B^+ \rightarrow \bar{D}^0\ell^+\nu_\ell) = (2.23 \pm 0.12) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

³ Excludes D^{*+} contribution to $D\pi$ modes.

⁴ LIVENTSEV 05 reports $[\Gamma(B^+ \rightarrow D^{*-}\pi^+\ell^+\nu_\ell)/\Gamma_{\text{total}}] / [B(B^0 \rightarrow D^*(2010)^-\ell^+\nu_\ell)] = 0.12 \pm 0.02 \pm 0.02$ which we multiply by our best value $B(B^0 \rightarrow D^*(2010)^-\ell^+\nu_\ell) = (4.93 \pm 0.11) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041Q55;LINKAGE=EC
 NODE=S041Q55;LINKAGE=LI

 $\Gamma(\bar{D}_1(2420)^0\ell^+\nu_\ell \times B(\bar{D}_1^0 \rightarrow D^{*-}\pi^+))/\Gamma_{\text{total}}$ Γ_{13}/Γ

| VALUE (units 10^{-3}) | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-------------|------|---------|
| 3.03±0.20 OUR AVERAGE | | | |

NODE=S041B32
 NODE=S041B32

2.97±0.17±0.17 ¹ AUBERT 09Y BABR $e^+e^- \rightarrow \Upsilon(4S)$

2.9 ±0.3 ±0.3 ² AUBERT 08BL BABR $e^+e^- \rightarrow \Upsilon(4S)$

4.2 ±0.7 ±0.7 ² LIVENTSEV 08 BELL $e^+e^- \rightarrow \Upsilon(4S)$

3.73±0.85±0.57 ³ ANASTASSOV 98 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$

¹ Uses a simultaneous measurement of all B semileptonic decays without full reconstruction of events.

NODE=S041B32;LINKAGE=AU

² Uses a fully reconstructed B meson as a tag on the recoil side.

NODE=S041B32;LINKAGE=BE
 NODE=S041B32;LINKAGE=EP

³ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

 $\Gamma(\bar{D}_1^*(2430)^0\ell^+\nu_\ell \times B(\bar{D}_1^0 \rightarrow D^{*-}\pi^+))/\Gamma_{\text{total}}$ Γ_{14}/Γ

| VALUE (units 10^{-3}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|-----------|-----------------------------------|
| 2.7±0.4±0.5 | | ¹ AUBERT | 08BL BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C05
 NODE=S041C05

••• We do not use the following data for averages, fits, limits, etc. •••

<0.7 90 ¹ LIVENTSEV 08 BELL $e^+e^- \rightarrow \Upsilon(4S)$

¹ Uses a fully reconstructed B meson as a tag on the recoil side.

NODE=S041C05;LINKAGE=BE

 $\Gamma(\bar{D}_2^*(2460)^0\ell^+\nu_\ell \times B(\bar{D}_2^0 \Rightarrow D^{*-}\pi^+))/\Gamma_{\text{total}}$ Γ_{15}/Γ

| VALUE (units 10^{-3}) | CL% | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-----|-------------------------------------|------|---------|
| 1.01±0.24 OUR AVERAGE | | Error includes scale factor of 2.0. | | |

NODE=S041B33
 NODE=S041B33

0.87±0.11±0.07 ¹ AUBERT 09Y BABR $e^+e^- \rightarrow \Upsilon(4S)$

1.5 ±0.2 ±0.2 ² AUBERT 08BL BABR $e^+e^- \rightarrow \Upsilon(4S)$

1.8 ±0.6 ±0.3 ² LIVENTSEV 08 BELL $e^+e^- \rightarrow \Upsilon(4S)$

••• We do not use the following data for averages, fits, limits, etc. •••

<1.6 90 ³ ANASTASSOV 98 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$

¹ Uses a simultaneous fit of all B semileptonic decays without full reconstruction of events. AUBERT 09Y reports $B(B^+ \rightarrow \bar{D}_2^*(2460)^0\ell^+\nu_\ell) \cdot B(\bar{D}_2^*(2460)^0 \rightarrow D^{*-}\pi^+) = (2.29 \pm 0.23 \pm 0.21) \times 10^{-3}$ and the authors have provided us the individual measurement.

NODE=S041B33;LINKAGE=AU

² Uses a fully reconstructed B meson as a tag on the recoil side.

NODE=S041B33;LINKAGE=BE
 NODE=S041B33;LINKAGE=EP

³ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

 $\Gamma(D_s^{(*)-}K^+\ell^+\nu_\ell)/\Gamma_{\text{total}}$ Γ_{16}/Γ

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|-----------------------------|-------------|------|---------|
| 6.1 ±1.0 OUR AVERAGE | | | |

NODE=S041C78
 NODE=S041C78

5.9 ±1.2 ±1.5 ¹ STYPULA 12 BELL $e^+e^- \rightarrow \Upsilon(4S)$

6.13 $^{+1.04}_{-1.03}$ ±0.67 ¹ DEL-AMO-SA..11L BABR $e^+e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C78;LINKAGE=EP

$\Gamma(D_s^- K^+ \ell^+ \nu_\ell)/\Gamma_{\text{total}}$ Γ_{17}/Γ VALUE (units 10^{-4})

DOCUMENT ID

TECN

COMMENT

 $3.0 \pm 0.9^{+1.1}_{-0.8}$ 1 STYPULA 12 BELL $e^+ e^- \rightarrow \Upsilon(4S)$ 1 Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041T92
NODE=S041T92

NODE=S041T92;LINKAGE=EP

 $\Gamma(D_s^{*-} K^+ \ell^+ \nu_\ell)/\Gamma_{\text{total}}$ Γ_{18}/Γ VALUE (units 10^{-4})

DOCUMENT ID

TECN

COMMENT

 2.9 ± 1.9 OUR AVERAGE [(6.1 \pm 1.2) $\times 10^{-4}$ OUR 2012 AVERAGE] $2.9 \pm 1.6^{+1.1}_{-1.0}$ 1,2 STYPULA 12 BELL $e^+ e^- \rightarrow \Upsilon(4S)$ 1 Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.2 STYPULA 12 provides also an upper limit of 0.56×10^{-3} at 90% CL for the same data. Also measures branching fraction of the combined modes of $D_s^- K^+ \ell^+ \nu_\ell$ and $D_s^{*-} K^+ \ell^+ \nu_\ell$ as $B(B^+ \rightarrow D_s^{(*)-} K^+ \ell^+ \nu_\ell) = (5.9 \pm 1.2 \pm 1.5) \times 10^{-4}$.NODE=S041T70
NODE=S041T70

NEW

NODE=S041T70;LINKAGE=EP
NODE=S041T70;LINKAGE=ST $\Gamma(\pi^0 \ell^+ \nu_\ell)/\Gamma_{\text{total}}$ Γ_{19}/Γ "OUR EVALUATION" is an average using rescaled values of the data listed below. The average and rescaling were performed by the Heavy Flavor Averaging Group (HFAG) and are described at <http://www.slac.stanford.edu/xorg/hfag/>. The averaging/rescaling procedure takes into account correlations between the measurements.VALUE (units 10^{-4})

DOCUMENT ID

TECN

COMMENT

 0.779 ± 0.026 OUR EVALUATION[(0.778 \pm 0.028) $\times 10^{-4}$ OUR 2012 EVALUATION] 0.742 ± 0.031 OUR AVERAGE[(0.72 \pm 0.04) $\times 10^{-4}$ OUR 2012 AVERAGE]0.77 \pm 0.04 \pm 0.031 LEES 12AA BABR $e^+ e^- \rightarrow \Upsilon(4S)$ 0.705 \pm 0.025 \pm 0.0352 DEL-AMO-SA..11C BABR $e^+ e^- \rightarrow \Upsilon(4S)$ 0.82 \pm 0.09 \pm 0.052 AUBERT 08AV BABR $e^+ e^- \rightarrow \Upsilon(4S)$ 0.77 \pm 0.14 \pm 0.083 HOKUUE 07 BELL $e^+ e^- \rightarrow \Upsilon(4S)$ 0.74 \pm 0.05 \pm 0.10

4 AUBERT,B 050 BABR Repl. by DEL-AMO-SANCHEZ 11C

1 Uses loose neutrino reconstruction technique. Assumes $B(Y(4S) \rightarrow B^+ B^-) = (51.6 \pm 0.6)\%$ and $B(Y(4S) \rightarrow B^0 \bar{B}^0) = (48.4 \pm 0.6)\%$.2 Using the isospin symmetry relation, B^+ and B^0 branching fractions are combined.3 The signal events are tagged by a second B meson reconstructed in the semileptonic mode $B \rightarrow D^{(*)} \ell \nu_\ell$.4 B^+ and B^0 decays combined assuming isospin symmetry. Systematic errors include both experimental and form-factor uncertainties.NODE=S041Q53
NODE=S041Q53

NODE=S041Q53

NEW; \rightarrow UNCHECKED \leftarrow

NEW

 $\Gamma(\pi^0 e^+ \nu_e)/\Gamma_{\text{total}}$ Γ_{20}/Γ VALUE (units 10^{-4})

CL%

DOCUMENT ID

TECN

COMMENT

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.9 \pm 0.2 \pm 0.21 ALEXANDER 96T CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$

<22

90

ANTREASYAN 90B CBAL $e^+ e^- \rightarrow \Upsilon(4S)$ 1 Derived based in the reported B^0 result by assuming isospin symmetry: $\Gamma(B^0 \rightarrow \pi^- \ell^+ \nu) = 2\Gamma(B^+ \rightarrow \pi^0 \ell^+ \nu)$.NODE=S041R70
NODE=S041R70

NODE=S041R70;LINKAGE=2N

 $\Gamma(\eta \ell^+ \nu_\ell)/\Gamma_{\text{total}}$ Γ_{21}/Γ VALUE (units 10^{-4})

CL%

DOCUMENT ID

TECN

COMMENT

 0.38 ± 0.06 OUR AVERAGE[(0.39 \pm 0.08) $\times 10^{-4}$ OUR 2012 AVERAGE Scale factor = 1.3]0.38 \pm 0.05 \pm 0.051 LEES 12AA BABR $e^+ e^- \rightarrow \Upsilon(4S)$ 0.31 \pm 0.06 \pm 0.081 AUBERT 09Q BABR $e^+ e^- \rightarrow \Upsilon(4S)$ 0.64 \pm 0.20 \pm 0.032 AUBERT 08AV BABR $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.36 \pm 0.05 \pm 0.04

1 DEL-AMO-SA..11F BABR Repl. by LEES 12AA

<1.01

90

3 ADAM 07 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ 0.84 \pm 0.31 \pm 0.18

4 ATHAR 03 CLE2 Repl. by ADAM 07

1 Uses loose neutrino reconstruction technique. Assumes $B(\Upsilon(4S) \rightarrow B^+ B^-) = (51.6 \pm 0.6)\%$ and $B(\Upsilon(4S) \rightarrow B^0 \bar{B}^0) = (48.4 \pm 0.6)\%$.2 Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.3 The B^0 and B^+ results are combined assuming the isospin, B lifetimes, and relative charged/neutral B production at the $\Upsilon(4S)$.4 ATHAR 03 reports systematic errors 0.16 ± 0.09 , which are experimental systematic and systematic due to model dependence. We combine these in quadrature.NODE=S041T10
NODE=S041T10

NEW

NODE=S041T10;LINKAGE=AU

NODE=S041T10;LINKAGE=EP
NODE=S041T10;LINKAGE=AD

NODE=S041T10;LINKAGE=AT

$\Gamma(\eta' \ell^+ \nu_\ell)/\Gamma_{\text{total}}$ VALUE (units 10^{-4})

DOCUMENT ID TECN COMMENT

 Γ_{22}/Γ NODE=S041Q88
NODE=S041Q88**0.23±0.08 OUR AVERAGE**

| | | | | | |
|---|---|--------|------|------|------------------------------------|
| 0.24±0.08±0.03 | 1 | LEES | 12AA | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.04±0.22 ^{+0.05} _{-0.02} | 2 | AUBERT | 08AV | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 2.66±0.80±0.56 | 3 | ADAM | 07 | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●

| | | | | |
|----------------|---|------------------|------|--------------------|
| 0.24±0.08±0.03 | 1 | DEL-AMO-SA...11F | BABR | Repl. by LEES 12AA |
|----------------|---|------------------|------|--------------------|

¹ Uses loose neutrino reconstruction technique. Assumes $B(Y(4S) \rightarrow B^+ B^-) = (51.6 \pm 0.6)\%$ and $B(Y(4S) \rightarrow B^0 \bar{B}^0) = (48.4 \pm 0.6)\%$.

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

³ The B^0 and B^+ results are combined assuming the isospin, B lifetimes, and relative charged/neutral B production at the $\Upsilon(4S)$. Corresponds to 90% CL interval $(1.20-4.46) \times 10^{-4}$.

NODE=S041Q88;LINKAGE=DE

NODE=S041Q88;LINKAGE=EP
NODE=S041Q88;LINKAGE=AD $\Gamma(\omega \ell^+ \nu_\ell)/\Gamma_{\text{total}}$ $\ell = e$ or μ , not sum over e and μ modes.VALUE (units 10^{-4})

CL%

DOCUMENT ID TECN COMMENT

 Γ_{23}/Γ

NODE=S041S47

NODE=S041S47
NODE=S041S47**1.21±0.12 OUR AVERAGE**[(1.15 ± 0.17) × 10⁻⁴ OUR 2012 AVERAGE]

| | | | | | |
|-----------------|-----|----------|------|------|------------------------------------|
| 1.21±0.14±0.08 | 1,2 | LEES | 13A | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 1.19±0.16±0.09 | 2,3 | LEES | 12AA | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 1.3 ± 0.4 ± 0.4 | 4 | SCHWANDA | 04 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●

| | | | | | |
|----------------|---|--------|-----|------|-------------------|
| 1.14±0.16±0.08 | 2 | AUBERT | 09Q | BABR | Repl. by LEES 13A |
|----------------|---|--------|-----|------|-------------------|

| | | | | | | |
|------|----|---|------|-----|------|------------------------------------|
| <2.1 | 90 | 5 | BEAN | 93B | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------|----|---|------|-----|------|------------------------------------|

¹ LEES 13A reports $(1.21 \pm 0.14 \pm 0.08) \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow \omega \ell^+ \nu_\ell)/\Gamma_{\text{total}}] \times [B(\omega(782) \rightarrow \pi^+ \pi^- \pi^0)]$ assuming $B(\omega(782) \rightarrow \pi^+ \pi^- \pi^0) = (89.2 \pm 0.7) \times 10^{-2}$.

² Uses $B(\Upsilon(4S) \rightarrow B^+ B^-) = (51.6 \pm 0.6)\%$ and $B(\Upsilon(4S) \rightarrow B^0 \bar{B}^0) = (48.4 \pm 0.6)\%$.

³ Uses loose neutrino reconstruction technique.

⁴ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

⁵ BEAN 93B limit set using ISGW Model. Using isospin and the quark model to combine $\Gamma(\rho^0 \ell^+ \nu_\ell)$ and $\Gamma(\rho^- \ell^+ \nu_\ell)$ with this result, they obtain a limit $<(1.6-2.7) \times 10^{-4}$ at 90% CL for $B^+ \rightarrow \omega \ell^+ \nu_\ell$. The range corresponds to the ISGW, WSB, and KS models. An upper limit on $|V_{ub}/V_{cb}| < 0.8-0.13$ at 90% CL is derived as well.

NODE=S041S47;LINKAGE=LS

NODE=S041S47;LINKAGE=NE
NODE=S041S47;LINKAGE=LE
NODE=S041S47;LINKAGE=EP
NODE=S041S47;LINKAGE=A $\Gamma(\omega \mu^+ \nu_\mu)/\Gamma_{\text{total}}$

VALUE

DOCUMENT ID TECN

 Γ_{24}/Γ NODE=S041R79
NODE=S041R79

● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●

| | | | | |
|------|---|----------|-----|-----|
| seen | 1 | ALBRECHT | 91C | ARG |
|------|---|----------|-----|-----|

¹ In ALBRECHT 91C, one event is fully reconstructed providing evidence for the $b \rightarrow u$ transition.

NODE=S041R79;LINKAGE=A

 $\Gamma(\rho^0 \ell^+ \nu_\ell)/\Gamma_{\text{total}}$ $\ell = e$ or μ , not sum over e and μ modes.VALUE (units 10^{-4})

CL%

DOCUMENT ID TECN COMMENT

 Γ_{25}/Γ

NODE=S041S48

NODE=S041S48
NODE=S041S48**1.07±0.13 OUR AVERAGE**

| | | | | | |
|---|---|------------------|------|------------------------------------|------------------------------------|
| 0.94±0.08±0.14 | 1 | DEL-AMO-SA...11C | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ | |
| 1.33±0.23±0.18 | 2 | HOKUUE | 07 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 1.34±0.15 ^{+0.28} _{-0.32} | 3 | BEHRENS | 00 | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●

| | | | | | |
|----------------|---|----------|-----|------|------------------------------|
| 1.16±0.11±0.30 | 1 | AUBERT,B | 050 | BABR | Repl. by DEL-AMO-SANCHEZ 11C |
|----------------|---|----------|-----|------|------------------------------|

| | | | | | |
|---|---|---------|----|------|------------------------------------|
| 1.40±0.21 ^{+0.32} _{-0.33} | 3 | BEHRENS | 00 | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|---|---------|----|------|------------------------------------|

OCCUR=2

| | | | | | |
|---|---|-----------|-----|------|------------------------------------|
| 1.2 ± 0.2 ^{+0.3} _{-0.4} | 3 | ALEXANDER | 96T | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|---|-----------|-----|------|------------------------------------|

| | | | | | | |
|------|----|---|------|-----|------|------------------------------------|
| <2.1 | 90 | 4 | BEAN | 93B | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------|----|---|------|-----|------|------------------------------------|

¹ B^+ and B^0 decays combined assuming isospin symmetry. Systematic errors include both experimental and form-factor uncertainties.

² The signal events are tagged by a second B meson reconstructed in the semileptonic mode $B \rightarrow D^{(*)} \ell \nu_\ell$.

³ Derived based in the reported B^0 result by assuming isospin symmetry: $\Gamma(B^0 \rightarrow \rho^- \ell^+ \nu) = 2\Gamma(B^+ \rightarrow \rho^0 \ell^+ \nu) \approx 2\Gamma(B^+ \rightarrow \omega \ell^+ \nu)$.

⁴ BEAN 93B limit set using ISGW Model. Using isospin and the quark model to combine $\Gamma(\omega^0 \ell^+ \nu_\ell)$ and $\Gamma(\rho^- \ell^+ \nu_\ell)$ with this result, they obtain a limit $<(1.6-2.7) \times 10^{-4}$ at 90% CL for $B^+ \rightarrow \rho^0 \ell^+ \nu_\ell$. The range corresponds to the ISGW, WSB, and KS models. An upper limit on $|V_{ub}/V_{cb}| < 0.8-0.13$ at 90% CL is derived as well.

NODE=S041S48;LINKAGE=IS

NODE=S041S48;LINKAGE=HO

NODE=S041S48;LINKAGE=2N

NODE=S041S48;LINKAGE=A

 $\Gamma(\rho^+ e^+ \nu_e)/\Gamma_{\text{total}}$ Γ_{26}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-----------------------|-----|-------------------|----------|------------------------------------|
| $<5.2 \times 10^{-3}$ | 90 | ¹ ADAM | 03B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C2
NODE=S041C2

¹ Based on phase-space model; if $V-A$ model is used, the 90% CL upper limit becomes $< 1.2 \times 10^{-3}$.

NODE=S041C2;LINKAGE=VA

 $\Gamma(e^+ \nu_e)/\Gamma_{\text{total}}$ Γ_{27}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-----------------------|---------|------------------------------------|
| < 0.98 | 90 | ¹ SATOYAMA | 07 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041S55
NODE=S041S55

• • • We do not use the following data for averages, fits, limits, etc. • • •

< 8 90 ¹ AUBERT 10E BABR $e^+ e^- \rightarrow \Upsilon(4S)$

< 1.9 90 ¹ AUBERT 09V BABR $e^+ e^- \rightarrow \Upsilon(4S)$

< 5.2 90 ¹ AUBERT 08AD BABR $e^+ e^- \rightarrow \Upsilon(4S)$

< 15 90 ARTUSO 95 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041S55;LINKAGE=EP

 $\Gamma(\mu^+ \nu_\mu)/\Gamma_{\text{total}}$ Γ_{28}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|----------|------------------------------------|
| < 1.0 | 90 | ¹ AUBERT | 09V BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041S56
NODE=S041S56

• • • We do not use the following data for averages, fits, limits, etc. • • •

< 11 90 ¹ AUBERT 10E BABR $e^+ e^- \rightarrow \Upsilon(4S)$

< 5.6 90 ¹ AUBERT 08AD BABR $e^+ e^- \rightarrow \Upsilon(4S)$

< 1.7 90 ¹ SATOYAMA 07 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

< 6.6 90 AUBERT 04O BABR Repl. by AUBERT 09V

< 21 90 ARTUSO 95 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041S56;LINKAGE=EP

 $\Gamma(\tau^+ \nu_\tau)/\Gamma_{\text{total}}$ Γ_{29}/Γ

See the note on "Decay Constants of Charged Pseudoscalar Mesons" in the D_s^+ Listings.

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|-------------|------|---|
| 1.05 ± 0.25 OUR AVERAGE | | | | Error includes scale factor of 1.1. $[(1.65 \pm 0.34) \times 10^{-4}$ |
| OUR 2012 AVERAGE] | | | | |

NODE=S041S57

NODE=S041S57

NODE=S041S57

NEW

$0.72^{+0.27}_{-0.25} \pm 0.11$ ¹ HARA 13 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

$1.7 \pm 0.8 \pm 0.2$ ^{2,3} AUBERT 10E BABR $e^+ e^- \rightarrow \Upsilon(4S)$

$1.54^{+0.38}_{-0.37}^{+0.29}_{-0.31}$ ^{2,4} HARA 10 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

$1.8^{+0.9}_{-0.8} \pm 0.45$ ^{2,5} AUBERT 08D BABR $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

$0.9 \pm 0.6 \pm 0.1$ ^{2,3} AUBERT 07AL BABR Repl. by AUBERT 10E

< 2.6 90 ² AUBERT 06K BABR $e^+ e^- \rightarrow \Upsilon(4S)$

$1.79^{+0.56}_{-0.49}^{+0.46}_{-0.51}$ ^{2,5} IKADO 06 BELL Repl. by HARA 13

< 4.2 90 ² AUBERT,B 05B BABR Repl. by AUBERT 06k

< 8.3 90 ⁶ BARATE 01E ALEP $e^+ e^- \rightarrow Z$

< 8.4 90 ² BROWDER 01 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$

< 5.7 90 ⁷ ACCIARRI 97F L3 $e^+ e^- \rightarrow Z$

< 104 90 ⁸ ALBRECHT 95D ARG $e^+ e^- \rightarrow \Upsilon(4S)$

< 22 90 ARTUSO 95 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$

< 18 90 ⁹ BUSKULIC 95 ALEP $e^+ e^- \rightarrow Z$

- ¹The authors combine their result with that from HARA 10 obtaining $B(B^- \rightarrow \tau^- \bar{\nu}_\tau) = (0.96 \pm 0.26) \times 10^{-4}$ and deriving $f_B |V_{ub}| = (7.4 \pm 0.8 \pm 0.5) \times 10^{-4}$ GeV.
- ²Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.
- ³Requires one reconstructed semileptonic B decay $B^- \rightarrow D^0 \ell^- \bar{\nu}_\ell X$ in the recoil.
- ⁴Requires one reconstructed semileptonic B decay $B^- \rightarrow D^{(*)0} \ell^- \bar{\nu}_\ell X$ in the recoil.
- ⁵The analysis is based on a sample of events with one fully reconstructed tag B in a hadronic decay mode $B^- \rightarrow D^{(*)0} X^-$.
- ⁶The energy-flow and b -tagging algorithms were used.
- ⁷ACCIARRI 97F uses missing-energy technique and $f(b \rightarrow B^-) = (38.2 \pm 2.5)\%$.
- ⁸ALBRECHT 95D uses full reconstruction of one B decay as tag.
- ⁹BUSKULIC 95 uses same missing-energy technique as in $\bar{b} \rightarrow \tau^+ \nu_\tau X$, but analysis is restricted to endpoint region of missing-energy distribution.

NODE=S041S57;LINKAGE=D

NODE=S041S57;LINKAGE=EP
 NODE=S041S57;LINKAGE=UB
 NODE=S041S57;LINKAGE=HA
 NODE=S041S57;LINKAGE=BT

NODE=S041S57;LINKAGE=QK
 NODE=S041S57;LINKAGE=C
 NODE=S041S57;LINKAGE=A
 NODE=S041S57;LINKAGE=B

| $\Gamma(\ell^+ \nu_\ell \gamma)/\Gamma_{\text{total}}$ | | | | | Γ_{30}/Γ |
|--|-----|---------------------|-----------|------------------------------------|----------------------|
| VALUE | CL% | DOCUMENT ID | TECN | COMMENT | |
| $< 15.6 \times 10^{-6}$ | 90 | ¹ AUBERT | 09AT BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ | |
| ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. | | | | | |

NODE=S041P01
 NODE=S041P01

NODE=S041P01;LINKAGE=EP

| $\Gamma(e^+ \nu_e \gamma)/\Gamma_{\text{total}}$ | | | | | Γ_{31}/Γ |
|---|-----|----------------------|-----------|------------------------------------|----------------------|
| VALUE | CL% | DOCUMENT ID | TECN | COMMENT | |
| $< 17 \times 10^{-6}$ | 90 | ¹ AUBERT | 09AT BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ | |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | |
| $< 200 \times 10^{-6}$ | 90 | ² BROWDER | 97 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ | |
| ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. | | | | | |
| ² BROWDER 97 uses the hermiticity of the CLEO II detector to reconstruct the neutrino energy and momentum. | | | | | |

NODE=S041B9
 NODE=S041B9

NODE=S041B9;LINKAGE=EP
 NODE=S041B9;LINKAGE=A

| $\Gamma(\mu^+ \nu_\mu \gamma)/\Gamma_{\text{total}}$ | | | | | Γ_{32}/Γ |
|---|-----|----------------------|-----------|------------------------------------|----------------------|
| VALUE | CL% | DOCUMENT ID | TECN | COMMENT | |
| $< 24 \times 10^{-6}$ | 90 | ¹ AUBERT | 09AT BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ | |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | |
| $< 52 \times 10^{-6}$ | 90 | ² BROWDER | 97 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ | |
| ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. | | | | | |
| ² BROWDER 97 uses the hermiticity of the CLEO II detector to reconstruct the neutrino energy and momentum. | | | | | |

NODE=S041B10
 NODE=S041B10

NODE=S041B10;LINKAGE=EP
 NODE=S041B10;LINKAGE=A

| $\Gamma(D^0 X)/\Gamma_{\text{total}}$ | | | | | Γ_{33}/Γ |
|--|--|-------------------------|----------|------------------------------------|----------------------|
| VALUE | | DOCUMENT ID | TECN | COMMENT | |
| $0.086 \pm 0.006 \pm 0.004$ | | ¹ AUBERT | 07N BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ | |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | |
| $0.098 \pm 0.009 \pm 0.006$ | | ¹ AUBERT, BE | 04B BABR | Repl. by AUBERT 07N | |
| ¹ Events are selected by completely reconstructing one B and searching for a reconstructed charmed particle in the rest of the event. The last error includes systematic and charm branching ratio uncertainties. | | | | | |

NODE=S041Q24
 NODE=S041Q24

NODE=S041Q24;LINKAGE=AU

| $\Gamma(\bar{D}^0 X)/\Gamma_{\text{total}}$ | | | | | Γ_{34}/Γ |
|--|--|-------------------------|----------|------------------------------------|----------------------|
| VALUE | | DOCUMENT ID | TECN | COMMENT | |
| $0.786 \pm 0.016^{+0.034}_{-0.033}$ | | ¹ AUBERT | 07N BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ | |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | |
| $0.793 \pm 0.025^{+0.045}_{-0.044}$ | | ¹ AUBERT, BE | 04B BABR | Repl. by AUBERT 07N | |
| ¹ Events are selected by completely reconstructing one B and searching for a reconstructed charmed particle in the rest of the event. The last error includes systematic and charm branching ratio uncertainties. | | | | | |

NODE=S041Q25
 NODE=S041Q25

NODE=S041Q25;LINKAGE=AU

| $\Gamma(D^0 X)/[\Gamma(D^0 X) + \Gamma(\bar{D}^0 X)]$ | | | | | $\Gamma_{33}/(\Gamma_{33} + \Gamma_{34})$ |
|---|--|-------------|----------|------------------------------------|---|
| VALUE | | DOCUMENT ID | TECN | COMMENT | |
| $0.098 \pm 0.007 \pm 0.001$ | | AUBERT | 07N BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ | |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | |
| $0.110 \pm 0.010 \pm 0.003$ | | AUBERT, BE | 04B BABR | Repl. by AUBERT 07N | |

NODE=S041Q26
 NODE=S041Q26

$\Gamma(D^+ X)/\Gamma_{\text{total}}$ Γ_{35}/Γ

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-------------------------|------|---|
| 0.025 ± 0.005 ± 0.002 | ¹ AUBERT | 07N | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.038 ± 0.009 ± 0.005 | ¹ AUBERT, BE | 04B | BABR Repl. by AUBERT 07N |

NODE=S041Q27
 NODE=S041Q27

¹ Events are selected by completely reconstructing one B and searching for a reconstructed charmed particle in the rest of the event. The last error includes systematic and charm branching ratio uncertainties.

NODE=S041Q27;LINKAGE=AU

 $\Gamma(D^- X)/\Gamma_{\text{total}}$ Γ_{36}/Γ

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-------------------------|------|---|
| 0.099 ± 0.008 ± 0.009 | ¹ AUBERT | 07N | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.098 ± 0.012 ± 0.014 | ¹ AUBERT, BE | 04B | BABR Repl. by AUBERT 07N |

NODE=S041Q28
 NODE=S041Q28

¹ Events are selected by completely reconstructing one B and searching for a reconstructed charmed particle in the rest of the event. The last error includes systematic and charm branching ratio uncertainties.

NODE=S041Q28;LINKAGE=AU

 $\Gamma(D^+ X)/[\Gamma(D^+ X) + \Gamma(D^- X)]$ $\Gamma_{35}/(\Gamma_{35} + \Gamma_{36})$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-------------|------|---|
| 0.204 ± 0.035 ± 0.001 | AUBERT | 07N | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.278 ± 0.052 ± 0.009 | AUBERT, BE | 04B | BABR Repl. by AUBERT 07N |

NODE=S041Q29
 NODE=S041Q29

 $\Gamma(D_s^+ X)/\Gamma_{\text{total}}$ Γ_{37}/Γ

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------------------|------|---|
| 0.079 ± 0.006^{+0.013}_{-0.011} | ¹ AUBERT | 07N | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.143 ± 0.016 ^{+0.051} _{-0.034} | ¹ AUBERT, BE | 04B | BABR Repl. by AUBERT 07N |

NODE=S041Q30
 NODE=S041Q30

¹ Events are selected by completely reconstructing one B and searching for a reconstructed charmed particle in the rest of the event. The last error includes systematic and charm branching ratio uncertainties.

NODE=S041Q30;LINKAGE=AU

 $\Gamma(D_s^- X)/\Gamma_{\text{total}}$ Γ_{38}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|-------------------------|------|---|
| 0.011 ± 0.004^{+0.002}_{-0.003} | | ¹ AUBERT | 07N | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| <0.022 | 90 | ¹ AUBERT, BE | 04B | BABR Repl. by AUBERT 07N |

NODE=S041Q31
 NODE=S041Q31

¹ Events are selected by completely reconstructing one B and searching for a reconstructed charmed particle in the rest of the event. The last error includes systematic and charm branching ratio uncertainties.

NODE=S041Q31;LINKAGE=AU

 $\Gamma(D_s^+ X)/[\Gamma(D_s^+ X) + \Gamma(D_s^- X)]$ $\Gamma_{37}/(\Gamma_{37} + \Gamma_{38})$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-------------|------|---|
| 0.884 ± 0.038 ± 0.002 | AUBERT | 07N | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.966 ± 0.039 ± 0.012 | AUBERT, BE | 04B | BABR Repl. by AUBERT 07N |

NODE=S041Q32
 NODE=S041Q32

 $\Gamma(D_s^- X)/[\Gamma(D_s^+ X) + \Gamma(D_s^- X)]$ $\Gamma_{38}/(\Gamma_{37} + \Gamma_{38})$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|------------------|-----|-------------|------|---|
| <0.126 | 90 | AUBERT, BE | 04B | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q33
 NODE=S041Q33

 $\Gamma(\Lambda_c^+ X)/\Gamma_{\text{total}}$ Γ_{39}/Γ

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------------------|------|---|
| 0.021 ± 0.005^{+0.008}_{-0.004} | ¹ AUBERT | 07N | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.029 ± 0.008 ^{+0.011} _{-0.007} | ¹ AUBERT, BE | 04B | BABR Repl. by AUBERT 07N |

NODE=S041Q34
 NODE=S041Q34

¹ Events are selected by completely reconstructing one B and searching for a reconstructed charmed particle in the rest of the event. The last error includes systematic and charm branching ratio uncertainties.

NODE=S041Q34;LINKAGE=AU

$\Gamma(\bar{\Lambda}_c^- X)/\Gamma_{\text{total}}$ Γ_{40}/Γ

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

NODE=S041Q35
 NODE=S041Q35

| | | | |
|-------------------------------------|---------------------|-----|---|
| $0.028 \pm 0.005^{+0.010}_{-0.007}$ | ¹ AUBERT | 07N | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------------------------------------|---------------------|-----|---|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|-------------------------------------|------------------------|-----|--------------------------|
| $0.035 \pm 0.008^{+0.013}_{-0.009}$ | ¹ AUBERT,BE | 04B | BABR Repl. by AUBERT 07N |
|-------------------------------------|------------------------|-----|--------------------------|

¹ Events are selected by completely reconstructing one B and searching for a reconstructed charmed particle in the rest of the event. The last error includes systematic and charm branching ratio uncertainties.

NODE=S041Q35;LINKAGE=AU

 $\Gamma(\Lambda_c^+ X)/[\Gamma(\Lambda_c^+ X) + \Gamma(\bar{\Lambda}_c^- X)]$ $\Gamma_{39}/(\Gamma_{39} + \Gamma_{40})$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

NODE=S041Q36
 NODE=S041Q36

| | | | |
|-----------------------------|--------|-----|---|
| $0.427 \pm 0.071 \pm 0.001$ | AUBERT | 07N | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------------|--------|-----|---|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|-----------------------------|-----------|-----|--------------------------|
| $0.452 \pm 0.090 \pm 0.003$ | AUBERT,BE | 04B | BABR Repl. by AUBERT 07N |
|-----------------------------|-----------|-----|--------------------------|

 $\Gamma(\bar{c} X)/\Gamma_{\text{total}}$ Γ_{41}/Γ

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

NODE=S041Q37
 NODE=S041Q37

| | | | |
|-------------------------------------|---------------------|-----|---|
| $0.968 \pm 0.019^{+0.041}_{-0.039}$ | ¹ AUBERT | 07N | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------------------------------------|---------------------|-----|---|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|-------------------------------------|------------------------|-----|--------------------------|
| $0.983 \pm 0.030^{+0.054}_{-0.051}$ | ¹ AUBERT,BE | 04B | BABR Repl. by AUBERT 07N |
|-------------------------------------|------------------------|-----|--------------------------|

¹ Events are selected by completely reconstructing one B and searching for a reconstructed charmed particle in the rest of the event. The last error includes systematic and charm branching ratio uncertainties.

NODE=S041Q37;LINKAGE=AU

 $\Gamma(c X)/\Gamma_{\text{total}}$ Γ_{42}/Γ

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

NODE=S041Q38
 NODE=S041Q38

| | | | |
|-------------------------------------|---------------------|-----|---|
| $0.234 \pm 0.012^{+0.018}_{-0.014}$ | ¹ AUBERT | 07N | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------------------------------------|---------------------|-----|---|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|-------------------------------------|------------------------|-----|--------------------------|
| $0.330 \pm 0.022^{+0.055}_{-0.037}$ | ¹ AUBERT,BE | 04B | BABR Repl. by AUBERT 07N |
|-------------------------------------|------------------------|-----|--------------------------|

¹ Events are selected by completely reconstructing one B and searching for a reconstructed charmed particle in the rest of the event. The last error includes systematic and charm branching ratio uncertainties.

NODE=S041Q38;LINKAGE=AU

 $\Gamma(\bar{c} c X)/\Gamma_{\text{total}}$ Γ_{43}/Γ

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

NODE=S041Q39
 NODE=S041Q39

| | | | |
|-------------------------------------|---------------------|-----|---|
| $1.202 \pm 0.023^{+0.053}_{-0.049}$ | ¹ AUBERT | 07N | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------------------------------------|---------------------|-----|---|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|-------------------------------------|------------------------|-----|--------------------------|
| $1.313 \pm 0.037^{+0.088}_{-0.075}$ | ¹ AUBERT,BE | 04B | BABR Repl. by AUBERT 07N |
|-------------------------------------|------------------------|-----|--------------------------|

¹ Events are selected by completely reconstructing one B and searching for a reconstructed charmed particle in the rest of the event. The last error includes systematic and charm branching ratio uncertainties.

NODE=S041Q39;LINKAGE=AU

 $\Gamma(\bar{D}^0 \pi^+)/\Gamma_{\text{total}}$ Γ_{44}/Γ

| VALUE (units 10^{-3}) | EVTS | DOCUMENT ID | TECN | COMMENT |
|--------------------------|------|-------------|------|---------|
|--------------------------|------|-------------|------|---------|

NODE=S041R1
 NODE=S041R1

4.81 ± 0.15 OUR FIT

4.84 ± 0.15 OUR AVERAGE

| | | | | |
|--------------------------|--|---------------------|-----|---|
| $4.90 \pm 0.07 \pm 0.22$ | | ¹ AUBERT | 07H | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------------|--|---------------------|-----|---|

| | | | | |
|-----------------------|--|------------------------|-----|----------------------------|
| $5.3 \pm 0.6 \pm 0.3$ | | ² ABULENCIA | 06J | CDF $p\bar{p}$ at 1.96 TeV |
|-----------------------|--|------------------------|-----|----------------------------|

| | | | | |
|--------------------------|--|------------------------|-----|---|
| $4.49 \pm 0.21 \pm 0.23$ | | ³ AUBERT,BE | 06J | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------------|--|------------------------|-----|---|

| | | | | |
|--------------------------|--|----------------------|-----|---|
| $4.97 \pm 0.12 \pm 0.29$ | | ^{1,4} AHMED | 02B | CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------------|--|----------------------|-----|---|

| | | | | |
|-----------------------|----|---------------------------|------|------------------------------------|
| $5.0 \pm 0.7 \pm 0.6$ | 54 | ⁵ BORTOLETTO92 | CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|----|---------------------------|------|------------------------------------|

| | | | | |
|-----------------------------------|----|--------------------|----|---|
| $5.4^{+1.8}_{-1.5}^{+1.2}_{-0.9}$ | 14 | ⁶ BEBEK | 87 | CLEO $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------------------|----|--------------------|----|---|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|---------------------------------|--|-----------------------|-----|--------------------------|
| $4.76 \pm 0.26^{+0.05}_{-0.06}$ | | ⁷ AUBERT,B | 04P | BABR Repl. by AUBERT 07H |
|---------------------------------|--|-----------------------|-----|--------------------------|

| | | | | |
|-----------------------|-----|-------------------|----|-------------------------|
| $5.5 \pm 0.4 \pm 0.5$ | 304 | ⁸ ALAM | 94 | CLE2 Repl. by AHMED 02B |
|-----------------------|-----|-------------------|----|-------------------------|

| | | | | |
|-----------------------|----|-----------------------|-----|--|
| $2.0 \pm 0.8 \pm 0.6$ | 12 | ⁵ ALBRECHT | 90J | ARG $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|----|-----------------------|-----|--|

| | | | | |
|-----------------------|---|-----------------------|-----|--|
| $1.9 \pm 1.0 \pm 0.6$ | 7 | ⁹ ALBRECHT | 88K | ARG $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|---|-----------------------|-----|--|

- ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.
- ² ABULENCIA 06J reports $[\Gamma(B^+ \rightarrow \bar{D}^0 \pi^+)/\Gamma_{\text{total}}] / [B(B^0 \rightarrow D^- \pi^+)] = 1.97 \pm 0.10 \pm 0.21$ which we multiply by our best value $B(B^0 \rightarrow D^- \pi^+) = (2.68 \pm 0.13) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.
- ³ Uses a missing-mass method. Does not depend on D branching fractions or B^+/B^0 production rates.
- ⁴ AHMED 02B reports an additional uncertainty on the branching ratios to account for 4.5% uncertainty on relative production of B^0 and B^+ , which is not included here.
- ⁵ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses the Mark III branching fractions for the D .
- ⁶ BEBEK 87 value has been updated in BERKELMAN 91 to use same assumptions as noted for BORTOLETTO 92.
- ⁷ AUBERT, B 04P reports $[\Gamma(B^+ \rightarrow \bar{D}^0 \pi^+)/\Gamma_{\text{total}}] \times [B(D^0 \rightarrow K^- \pi^+)] = (1.846 \pm 0.032 \pm 0.097) \times 10^{-4}$ which we divide by our best value $B(D^0 \rightarrow K^- \pi^+) = (3.88 \pm 0.05) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.
- ⁸ ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II absolute $B(D^0 \rightarrow K^- \pi^+)$ and the PDG 1992 $B(D^0 \rightarrow K^- \pi^+ \pi^0)/B(D^0 \rightarrow K^- \pi^+)$ and $B(D^0 \rightarrow K^- 2\pi^+ \pi^-)/B(D^0 \rightarrow K^- \pi^+)$.
- ⁹ ALBRECHT 88K assumes $B^0 \bar{B}^0 : B^+ B^-$ ratio is 45:55. Superseded by ALBRECHT 90J.

NODE=S041R1;LINKAGE=EP

NODE=S041R1;LINKAGE=AL

NODE=S041R1;LINKAGE=RT

NODE=S041R1;LINKAGE=H3

NODE=S041R1;LINKAGE=B9

NODE=S041R1;LINKAGE=A

NODE=S041R1;LINKAGE=AU

NODE=S041R1;LINKAGE=E

NODE=S041R1;LINKAGE=D

 $\Gamma(\bar{D}^0 \rho^+)/\Gamma_{\text{total}}$ Γ_{47}/Γ

| VALUE | EVTS | DOCUMENT ID | TECN | COMMENT |
|------------------------------------|------|---------------------------|------|------------------------------------|
| 0.0134 ± 0.0018 OUR AVERAGE | | | | |
| 0.0135 ± 0.0012 ± 0.0015 | 212 | ¹ ALAM 94 | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.013 ± 0.004 ± 0.004 | 19 | ² ALBRECHT 90J | ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R25
NODE=S041R25

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-----------------------|----|---------------------------|-----|------------------------------------|
| 0.021 ± 0.008 ± 0.009 | 10 | ³ ALBRECHT 88K | ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|----|---------------------------|-----|------------------------------------|

NODE=S041R25;LINKAGE=E

- ¹ ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II absolute $B(D^0 \rightarrow K^- \pi^+)$ and the PDG 1992 $B(D^0 \rightarrow K^- \pi^+ \pi^0)/B(D^0 \rightarrow K^- \pi^+)$ and $B(D^0 \rightarrow K^- 2\pi^+ \pi^-)/B(D^0 \rightarrow K^- \pi^+)$.

- ² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses the Mark III branching fractions for the D .

NODE=S041R25;LINKAGE=B9

- ³ ALBRECHT 88K assumes $B^0 \bar{B}^0 : B^+ B^-$ ratio is 45:55.

NODE=S041R25;LINKAGE=A

 $\Gamma(\bar{D}^0 K^+)/\Gamma(\bar{D}^0 \pi^+)$ Γ_{48}/Γ_{44}

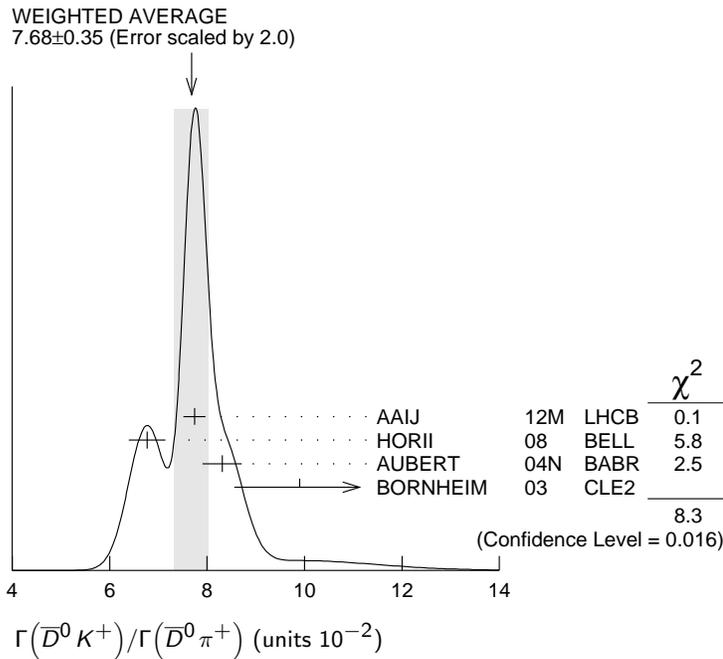
| VALUE (units 10^{-2}) | DOCUMENT ID | TECN | COMMENT |
|--|-------------|------|------------------------------------|
| 7.68 ± 0.35 OUR AVERAGE | | | |
| Error includes scale factor of 2.0. See the ideogram below. | | | |
| [(7.6 ± 0.6) × 10 ⁻² OUR 2012 AVERAGE Scale factor = 2.3] | | | |
| 7.74 ± 0.12 ± 0.19 | AAIJ 12M | LHCB | pp at 7 TeV |
| 6.77 ± 0.23 ± 0.30 | HORII 08 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 8.31 ± 0.35 ± 0.20 | AUBERT 04N | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 9.9 ^{+1.4} _{-1.2} ^{+0.7} _{-0.6} | BORNHEIM 03 | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B07
NODE=S041B07

NEW

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|-----------------|------------|------|----------------------|
| 9.4 ± 0.9 ± 0.7 | ABE 03D | BELL | Repl. by SWAIN 03 |
| 7.7 ± 0.5 ± 0.6 | SWAIN 03 | BELL | Repl. by HORII 08 |
| 7.9 ± 0.9 ± 0.6 | ABE 01I | BELL | Repl. by ABE 03D |
| 5.5 ± 1.4 ± 0.5 | ATHANAS 98 | CLE2 | Repl. by BORNHEIM 03 |



$\Gamma(D_{CP(+1)} K^+) / \Gamma(D_{CP(+1)} \pi^+)$

$\Gamma_{49} / \Gamma_{45}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|----------------------------------|---------------------|------|---|
| 0.087±0.008 OUR AVERAGE | | | |
| [0.086 ± 0.009 OUR 2012 AVERAGE] | | | |
| 0.087±0.008±0.004 | ^{1,2} ABE | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.088±0.016±0.005 | ³ AUBERT | 04N | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B97
NODE=S041B97
NEW

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|-------------------|--------------------|-----|------------------------|
| 0.125±0.036±0.010 | ³ ABE | 03D | BELL Repl. by SWAIN 03 |
| 0.093±0.018±0.008 | ³ SWAIN | 03 | BELL Repl. by ABE 06 |

¹ Reports a double ratio of $B(B^+ \rightarrow D_{CP(+1)} K^+) / B(B^+ \rightarrow D_{CP(+1)} \pi^+)$ and $B(B^+ \rightarrow \bar{D}^0 K^+) / B(B^+ \rightarrow \bar{D}^0 \pi^+)$, $1.13 \pm 0.16 \pm 0.08$. We multiply by our best value of $B(B^+ \rightarrow \bar{D}^0 K^+) / B(B^+ \rightarrow \bar{D}^0 \pi^+) = 0.083 \pm 0.006$. Our first error is their experiment's error and the second error is systematic error from using our best value.

² ABE 06 reports $[\Gamma(B^+ \rightarrow D_{CP(+1)} K^+) / \Gamma(B^+ \rightarrow D_{CP(+1)} \pi^+)] / [\Gamma(B^+ \rightarrow \bar{D}^0 K^+) / \Gamma(B^+ \rightarrow \bar{D}^0 \pi^+)] = 1.13 \pm 0.06 \pm 0.08$ which we multiply by our best value $\Gamma(B^+ \rightarrow \bar{D}^0 K^+) / \Gamma(B^+ \rightarrow \bar{D}^0 \pi^+) = 0.0768 \pm 0.0035$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

³ $CP=+1$ eigenstate of $D^0 \bar{D}^0$ system is reconstructed via $K^+ K^-$ and $\pi^+ \pi^-$.

NODE=S041B97;LINKAGE=AB

NODE=S041B97;LINKAGE=AE

NODE=S041B97;LINKAGE=A

$\Gamma(D_{CP(+1)} K^+) / \Gamma(\bar{D}^0 K^+)$

$\Gamma_{49} / \Gamma_{48}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|------------------------------|------|------------------------------------|
| 0.518±0.029 OUR AVERAGE | | | |
| Error includes scale factor of 1.6. [0.60 ± 0.05 OUR 2012 AVERAGE] | | | |
| 0.504±0.019±0.006 | ¹ AAIJ | 12M | LHCB pp at 7 TeV |
| 0.65 ± 0.12 ± 0.06 | ² AALTONEN | 10A | CDF $p\bar{p}$ at 1.96 TeV |
| 0.590±0.045±0.025 | ³ DEL-AMO-SA..10G | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|---------------------|--------|------|-----------------------------------|
| 0.53 ± 0.05 ± 0.025 | AUBERT | 08AA | BABR Repl. by DEL-AMO-SANCHEZ 10G |
| 0.45 ± 0.06 ± 0.02 | AUBERT | 06J | BABR Repl. by AUBERT 08AA |

¹ AAIJ 12M reports $R_{CP+} = 1.007 \pm 0.038 \pm 0.012$ which we have divided by 2.

² Reports $R_{CP+} = 2 (B(B^- \rightarrow D_{CP(+1)} K^-) + B(B^+ \rightarrow D_{CP(+1)} K^+)) / (B(B^- \rightarrow D^0 K^-) + B(B^+ \rightarrow \bar{D}^0 K^+)) = 1.30 \pm 0.24 \pm 0.12$ that we have divided by 2.

³ Reports $R_{CP+} = 1.18 \pm 0.09 \pm 0.05$ that we have divided by 2.

NODE=S041C18;LINKAGE=AI

NODE=S041C18;LINKAGE=AA

NODE=S041C18;LINKAGE=DE

$\Gamma(D_{CP(-1)} K^+) / \Gamma(D_{CP(-1)} \pi^+)$

$\Gamma_{50} / \Gamma_{46}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------------|------------------|------|---|
| 0.097±0.016±0.007 | ¹ ABE | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|-------------------|--------------------|-----|------------------------|
| 0.119±0.028±0.006 | ² ABE | 03D | BELL Repl. by SWAIN 03 |
| 0.108±0.019±0.007 | ² SWAIN | 03 | BELL Repl. by ABE 06 |

NODE=S041B98
NODE=S041B98

- ¹ Reports a double ratio of $B(B^+ \rightarrow D_{CP(-1)} K^+)/B(B^+ \rightarrow D_{CP(-1)} \pi^+)$ and $B(B^+ \rightarrow \bar{D}^0 K^+)/B(B^+ \rightarrow \bar{D}^0 \pi^+)$, $1.17 \pm 0.14 \pm 0.14$. We multiply by our best value of $B(B^+ \rightarrow \bar{D}^0 K^+)/B(B^+ \rightarrow \bar{D}^0 \pi^+) = 0.083 \pm 0.006$. Our first error is their experiment's error and the second error is systematic error from using our best value.
- ² $CP=-1$ eigenstate of $D^0 \bar{D}^0$ system is reconstructed via $K_S^0 \pi^0$, $K_S^0 \omega$, $K_S^0 \phi$, $K_S^0 \eta$, and $K_S^0 \eta'$.

NODE=S041B98;LINKAGE=AB

NODE=S041B98;LINKAGE=A

 $\Gamma(D_{CP(-1)} K^+)/\Gamma(\bar{D}^0 K^+)$ Γ_{50}/Γ_{48}

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|------------------------------|------|------------------------------------|
| 0.54 ± 0.04 ± 0.02 | ¹ DEL-AMO-SA..10G | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| 0.515 ± 0.05 ± 0.025 | AUBERT | 08AA | BABR Repl. by DEL-AMO-SANCHEZ 10G |
| 0.43 ± 0.05 ± 0.02 | AUBERT | 06J | BABR Repl. by AUBERT 08AA |

NODE=S041C19
NODE=S041C19

- ¹ Reports $R_{CP+} = 1.07 \pm 0.08 \pm 0.04$ that we have divided by 2.

NODE=S041C19;LINKAGE=DE

 $\Gamma([K^- \pi^+]_D K^+)/\Gamma_{\text{total}}$ Γ_{51}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|-------------|------|---|
| < 2.8 × 10⁻⁷ | 90 | HORII | 08 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| < 6.3 × 10 ⁻⁷ | 90 | SAIGO | 05 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C51
NODE=S041C51 $\Gamma([K^- \pi^+]_D K^+)/\Gamma([K^+ \pi^-]_D K^+)$ Γ_{51}/Γ_{52}

| VALUE (units 10 ⁻³) | CL% | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|-----|-------------|------|---------|
| 15.3 ± 1.7 OUR AVERAGE | | | | |

NODE=S041Q12
NODE=S041Q12[(15.6 ± 3.3) × 10⁻³ OUR 2012 AVERAGE]

NEW

| | | | | |
|---|----|-----------------------|------|---|
| 15.2 ± 2.0 ± 0.4 | | AAIJ | 12M | LHCB $p p$ at 7 TeV |
| 22.0 ± 8.6 ± 2.6 | | ¹ AALTONEN | 11AJ | CDF $p \bar{p}$ at 1.96 TeV |
| 16.3 ^{+4.4+0.7} _{-4.1-1.3} | | HORII | 11 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 11 ± 6 ± 2 | | DEL-AMO-SA..10H | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| 7.8 ^{+6.2+2.0} _{-5.7-2.8} | | HORII | 08 | BELL Repl. by HORII 11 |
| < 29 | 90 | ² AUBERT | 05G | BABR Repl. by DEL-AMO-SANCHEZ 10H |
| < 44 | 90 | ³ SAIGO | 05 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 26 | 90 | ⁴ AUBERT,B | 04L | BABR Repl. by AUBERT 05G |

- ¹ AALTONEN 11AJ also measures the ratio separately for B^+ ($R^+(K)$) and B^- ($R^-(K)$) and obtains: $R^+(K) = (42.6 \pm 13.7 \pm 2.8) \times 10^{-3}$, $R^-(K) = (3.8 \pm 10.3 \pm 2.7) \times 10^{-3}$.

NODE=S041Q12;LINKAGE=AA

- ² AUBERT 05G extract a constraint on the magnitude of the ratio of amplitudes $|A(B^+ \rightarrow D^0 K^+)/A(B^+ \rightarrow \bar{D}^0 K^+)| < 0.23$ at 90% CL (Bayesian). Similar measurements from $B^+ \rightarrow D^{*0} K^+$ are also reported.

NODE=S041Q12;LINKAGE=AB

- ³ SAIGO 05 extract a constraint on the magnitude of the ratio of amplitudes $|A(B^+ \rightarrow D^0 K^+)/A(B^+ \rightarrow \bar{D}^0 K^+)| < 0.27$ at 90% CL.

NODE=S041Q12;LINKAGE=SA

- ⁴ AUBERT,B 04L extract a constraint on the magnitude of the ratio of amplitudes $|A(B^+ \rightarrow D^0 K^+)/A(B^+ \rightarrow \bar{D}^0 K^+)| < 0.22$ at 90% CL.

NODE=S041Q12;LINKAGE=AU

 $\Gamma([K^- \pi^+ \pi^0]_D K^+)/\Gamma([K^+ \pi^- \pi^0]_D K^+)$ Γ_{53}/Γ_{54}

| VALUE (units 10 ⁻³) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|---------------------|------|---|
| < 21 | 90 | ¹ LEES | 11D | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| < 39 | 95 | ² AUBERT | 07BN | BABR Repl. by LEES 11D |

NODE=S041Q89
NODE=S041Q89

- ¹ Extracts a constraint on the magnitude of the ratio of amplitudes $|A(B^+ \rightarrow D^0 K^+)/A(B^+ \rightarrow \bar{D}^0 K^+)| < 0.13$ at 95% CL.

NODE=S041Q89;LINKAGE=LE

- ² Extracts a constraint on the magnitude of the ratio of amplitudes $|A(B^+ \rightarrow D^0 K^+)/A(B^+ \rightarrow \bar{D}^0 K^+)| < 0.19$ at 95% CL.

NODE=S041Q89;LINKAGE=AU

 $\Gamma([K^- \pi^+]_D K^*(892)^+)/\Gamma([K^+ \pi^-]_D K^*(892)^+)$ Γ_{55}/Γ_{56}

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---|
| 0.066 ± 0.031 ± 0.010 | AUBERT | 09AJ | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| 0.046 ± 0.031 ± 0.008 | AUBERT,B | 05V | BABR Repl. by AUBERT 09AJ |

NODE=S041Q63
NODE=S041Q63

$$\Gamma([K^- \pi^+]_D \pi^+)/\Gamma_{\text{total}}$$

 Γ_{57}/Γ

VALUE (units 10^{-7})

DOCUMENT ID TECN COMMENT

$$6.29^{+1.02+0.37}_{-0.98-0.48}$$

HORII 08 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

$$6.6^{+1.9}_{-1.7} \pm 0.5$$

SAIGO 05 BELL Repl. by HORII 08

NODE=S041Q48
NODE=S041Q48

$$\Gamma([K^- \pi^+]_D \pi^+)/\Gamma([K^+ \pi^-]_D \pi^+)$$

 Γ_{57}/Γ_{58}

VALUE (units 10^{-3})

DOCUMENT ID TECN COMMENT

3.75±0.26 OUR AVERAGE Error includes scale factor of 1.3. See the ideogram below.
[(3.21 ± 0.32) × 10⁻³ OUR 2012 AVERAGE]

4.10±0.25±0.05 AAIJ 12M LHCB pp at 7 TeV

2.8 ± 0.7 ± 0.4 ¹AALTONEN 11AJ CDF $p\bar{p}$ at 1.96 TeV

3.28^{+0.38+0.12}_{-0.36-0.18} HORII 11 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

3.3 ± 0.6 ± 0.4 DEL-AMO-SA..10H BABR $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

3.40^{+0.55+0.15}_{-0.53-0.22} HORII 08 BELL Repl. by HORII 11

3.5 ^{+1.0}_{-0.9} ± 0.2 SAIGO 05 BELL Repl. by HORII 08

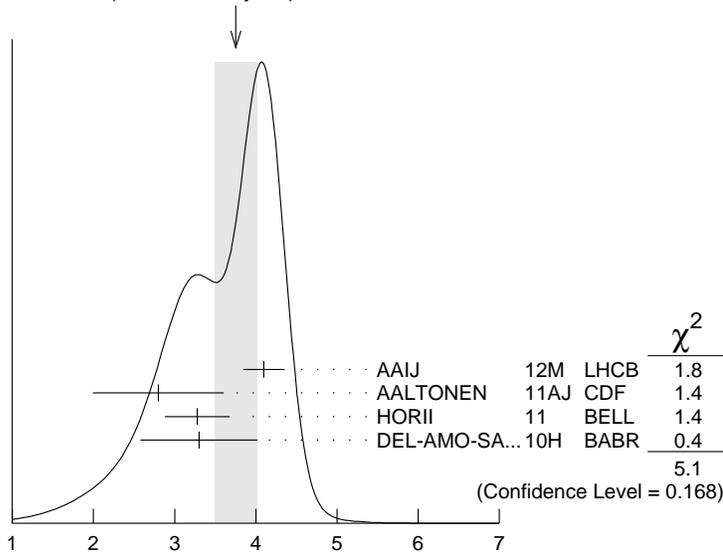
NODE=S041Q49
NODE=S041Q49

NEW

¹AALTONEN 11AJ also measures the ratio separately for B^+ ($R^+(\pi)$) and B^- ($R^-(\pi)$) and obtains: $R^+(\pi) = (2.4 \pm 1.0 \pm 0.4) \times 10^{-3}$, $R^-(\pi) = (3.1 \pm 1.1 \pm 0.4) \times 10^{-3}$.

NODE=S041Q49;LINKAGE=AA

WEIGHTED AVERAGE
3.75±0.26 (Error scaled by 1.3)



$\Gamma([K^- \pi^+]_D \pi^+)/\Gamma([K^+ \pi^-]_D \pi^+)$ (units 10^{-3})

$$\Gamma([K^- \pi^+]_D \pi^+)/\Gamma([K^+ \pi^-]_D \pi^+)$$

 Γ_{59}/Γ_{60}

VALUE (units 10^{-3})

DOCUMENT ID TECN COMMENT

$$3.2 \pm 0.9 \pm 0.8$$

DEL-AMO-SA..10H BABR $e^+ e^- \rightarrow \Upsilon(4S)$

NODE=S041QD0
NODE=S041QD0

$$\Gamma([K^- \pi^+]_D \gamma \pi^+)/\Gamma([K^+ \pi^-]_D \gamma \pi^+)$$

 Γ_{61}/Γ_{62}

VALUE (units 10^{-3})

DOCUMENT ID TECN COMMENT

$$2.7 \pm 1.4 \pm 2.2$$

DEL-AMO-SA..10H BABR $e^+ e^- \rightarrow \Upsilon(4S)$

NODE=S041QD1
NODE=S041QD1

$$\Gamma([K^- \pi^+]_D \pi^+ K^+)/\Gamma([K^+ \pi^-]_D \pi^+ K^+)$$

 Γ_{63}/Γ_{64}

VALUE (units 10^{-3})

DOCUMENT ID TECN COMMENT

$$1.8 \pm 0.9 \pm 0.4$$

DEL-AMO-SA..10H BABR $e^+ e^- \rightarrow \Upsilon(4S)$

NODE=S041QD2
NODE=S041QD2

$$\Gamma([K^- \pi^+]_D \gamma K^+)/\Gamma([K^+ \pi^-]_D \gamma K^+)$$

 Γ_{65}/Γ_{66}

VALUE (units 10^{-3})

DOCUMENT ID TECN COMMENT

$$1.3 \pm 1.4 \pm 0.8$$

DEL-AMO-SA..10H BABR $e^+ e^- \rightarrow \Upsilon(4S)$

NODE=S041QD3
NODE=S041QD3

$$\Gamma([\pi^+\pi^-\pi^0]_D K^-)/\Gamma_{\text{total}}$$

$$\Gamma_{67}/\Gamma$$

VALUE (units 10^{-6})

DOCUMENT ID TECN COMMENT

4.6±0.8±0.4

¹ AUBERT 07BJ BABR $e^+e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

5.5±1.0±0.7

¹ AUBERT,B 05T BABR Repl. by AUBERT 07BJ

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q56
NODE=S041Q56

NODE=S041Q56;LINKAGE=EP

$$\Gamma(\bar{D}^0 K^*(892)^+)/\Gamma_{\text{total}}$$

$$\Gamma_{68}/\Gamma$$

VALUE (units 10^{-4})

DOCUMENT ID TECN COMMENT

5.3 ±0.4 OUR AVERAGE

5.29±0.30±0.34

¹ AUBERT 06Z BABR $e^+e^- \rightarrow \Upsilon(4S)$

6.1 ±1.6 ±1.7

¹ MAHAPATRA 02 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

6.3 ±0.7 ±0.5

¹ AUBERT 04Q BABR Repl. by AUBERT 06Z

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B57
NODE=S041B57

NODE=S041B57;LINKAGE=EP

$$\Gamma(D_{CP(-1)} K^*(892)^+)/\Gamma(\bar{D}^0 K^*(892)^+)$$

$$\Gamma_{69}/\Gamma_{68}$$

VALUE

DOCUMENT ID TECN COMMENT

0.515±0.135±0.065

¹ AUBERT 09AJ BABR $e^+e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.325±0.13 ±0.04

² AUBERT,B 05U BABR Repl. by AUBERT 09AJ

¹ The authors report $R_{CP-} = 1.03 \pm 0.27 \pm 0.13$ which is, assuming CP conservation, twice the value of the quoted above branching ratio,

² The authors report $R_{CP-} = 0.65 \pm 0.26 \pm 0.08$ which is, assuming CP conservation, twice the value of the quoted above branching ratio.

NODE=S041Q61
NODE=S041Q61

NODE=S041Q61;LINKAGE=AB

NODE=S041Q61;LINKAGE=AU

$$\Gamma(D_{CP(+1)} K^*(892)^+)/\Gamma(\bar{D}^0 K^*(892)^+)$$

$$\Gamma_{70}/\Gamma_{68}$$

VALUE

DOCUMENT ID TECN COMMENT

1.085±0.175±0.045

¹ AUBERT 09AJ BABR $e^+e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.98 ±0.20 ±0.055

² AUBERT,B 05U BABR Repl. by AUBERT 09AJ

¹ The authors report $R_{CP+} = 2.17 \pm 0.35 \pm 0.09$ which is, assuming CP conservation, twice the value of the quoted above branching ratio,

² The authors report $R_{CP+} = 1.96 \pm 0.40 \pm 0.11$ which is, assuming CP conservation, twice the value of the quoted above branching ratio.

NODE=S041Q62
NODE=S041Q62

NODE=S041Q62;LINKAGE=AB

NODE=S041Q62;LINKAGE=AU

$$\Gamma(\bar{D}^0 K^+ \pi^+ \pi^-)/\Gamma(\bar{D}^0 \pi^+ \pi^+ \pi^-)$$

$$\Gamma_{71}/\Gamma_{74}$$

VALUE (units 10^{-2})

DOCUMENT ID TECN COMMENT

9.4±1.3±0.9

AAIJ 12T LHCB pp at 7 TeV

$$\Gamma(\bar{D}^0 K^+ \bar{K}^0)/\Gamma_{\text{total}}$$

$$\Gamma_{72}/\Gamma$$

VALUE (units 10^{-4})

DOCUMENT ID TECN COMMENT

5.5±1.4±0.8

¹ DRUTSKOY 02 BELL $e^+e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B64
NODE=S041B64

NODE=S041B64;LINKAGE=EP

$$\Gamma(\bar{D}^0 K^+ \bar{K}^*(892)^0)/\Gamma_{\text{total}}$$

$$\Gamma_{73}/\Gamma$$

VALUE (units 10^{-4})

DOCUMENT ID TECN COMMENT

7.5±1.3±1.1

¹ DRUTSKOY 02 BELL $e^+e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B66
NODE=S041B66

NODE=S041B66;LINKAGE=EP

$$\Gamma(\bar{D}^0 \pi^+ \pi^+ \pi^-)/\Gamma_{\text{total}}$$

$$\Gamma_{74}/\Gamma$$

VALUE

DOCUMENT ID TECN COMMENT

0.0057±0.0022 OUR FIT Error includes scale factor of 3.6.

0.0115±0.0029±0.0021

¹ BORTOLETTO92 CLEO $e^+e^- \rightarrow \Upsilon(4S)$

¹ BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D .

NODE=S041R85
NODE=S041R85

NODE=S041R85;LINKAGE=B9

$$\Gamma(\bar{D}^0 \pi^+ \pi^+ \pi^-)/\Gamma(\bar{D}^0 \pi^+)$$

$$\Gamma_{74}/\Gamma_{44}$$

VALUE

DOCUMENT ID TECN COMMENT

1.2 ±0.4 OUR FIT Error includes scale factor of 3.8.

1.27±0.06±0.11

AAIJ 11E LHCB pp at 7 TeV

NODE=S041C66
NODE=S041C66

$$\Gamma(\bar{D}^0 \pi^+ \pi^+ \pi^- \text{ nonresonant})/\Gamma_{\text{total}} \quad \Gamma_{75}/\Gamma$$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

| | | | |
|---------------------------------|---------------------------|------|------------------------------------|
| 0.0051 ± 0.0034 ± 0.0023 | ¹ BORTOLETTO92 | CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---------------------------------|---------------------------|------|------------------------------------|

¹ BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D .

NODE=S041R86
NODE=S041R86

NODE=S041R86;LINKAGE=B9

$$\Gamma(\bar{D}^0 \pi^+ \rho^0)/\Gamma_{\text{total}} \quad \Gamma_{76}/\Gamma$$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

| | | | |
|---------------------------------|---------------------------|------|------------------------------------|
| 0.0042 ± 0.0023 ± 0.0020 | ¹ BORTOLETTO92 | CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---------------------------------|---------------------------|------|------------------------------------|

¹ BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D .

NODE=S041R87
NODE=S041R87

NODE=S041R87;LINKAGE=B9

$$\Gamma(\bar{D}^0 a_1(1260)^+)/\Gamma_{\text{total}} \quad \Gamma_{77}/\Gamma$$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

| | | | |
|---------------------------------|---------------------------|------|------------------------------------|
| 0.0045 ± 0.0019 ± 0.0031 | ¹ BORTOLETTO92 | CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---------------------------------|---------------------------|------|------------------------------------|

¹ BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D .

NODE=S041R88
NODE=S041R88

NODE=S041R88;LINKAGE=B9

$$\Gamma(\bar{D}^0 \omega \pi^+)/\Gamma_{\text{total}} \quad \Gamma_{78}/\Gamma$$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

| | | | |
|---------------------------------|----------------------------|------|------------------------------------|
| 0.0041 ± 0.0007 ± 0.0006 | ¹ ALEXANDER 01B | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---------------------------------|----------------------------|------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. The signal is consistent with all observed $\omega \pi^+$ having proceeded through the ρ^+ resonance at mass $1349 \pm 25^{+10}_{-5}$ MeV and width $547 \pm 86^{+46}_{-45}$ MeV.

NODE=S041B54
NODE=S041B54

NODE=S041B54;LINKAGE=AK

$$\Gamma(D^*(2010)^- \pi^+ \pi^+)/\Gamma_{\text{total}} \quad \Gamma_{79}/\Gamma$$

| VALUE (units 10^{-3}) | CL% EVTS | DOCUMENT ID | TECN | COMMENT |
|--------------------------|----------|-------------|------|---------|
|--------------------------|----------|-------------|------|---------|

1.35 ± 0.22 OUR AVERAGE

| | | | | |
|--------------------|--|------------------|-----|---|
| 1.25 ± 0.08 ± 0.22 | | ¹ ABE | 04D | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------|--|------------------|-----|---|

| | | | | |
|-----------------|----|-------------------|----|---|
| 1.9 ± 0.7 ± 0.3 | 14 | ² ALAM | 94 | CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------|----|-------------------|----|---|

| | | | | |
|-----------------|----|-----------------------|-----|--|
| 2.6 ± 1.4 ± 0.7 | 11 | ³ ALBRECHT | 90J | ARG $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------|----|-----------------------|-----|--|

| | | | | |
|---------------------------------------|---|--------------------|----|---|
| 2.4 $^{+1.7}_{-1.6}$ $^{+1.0}_{-0.6}$ | 3 | ⁴ BEBEK | 87 | CLEO $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---------------------------------------|---|--------------------|----|---|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-----|----|---------------------------|------|------------------------------------|
| <4. | 90 | ⁵ BORTOLETTO92 | CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----|----|---------------------------|------|------------------------------------|

| | | | | |
|--------------|---|-----------------------|-----|--|
| 5. ± 2. ± 3. | 7 | ⁶ ALBRECHT | 87C | ARG $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------|---|-----------------------|-----|--|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II $B(D^*(2010)^+ \rightarrow D^0 \pi^+)$ and absolute $B(D^0 \rightarrow K^- \pi^+)$ and the PDG 1992 $B(D^0 \rightarrow K^- \pi^+ \pi^0)/B(D^0 \rightarrow K^- \pi^+)$ and $B(D^0 \rightarrow K^- 2\pi^+ \pi^-)/B(D^0 \rightarrow K^- \pi^+)$.

³ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses the Mark III branching fractions for the D .

⁴ BEBEK 87 value has been updated in BERKELMAN 91 to use same assumptions as noted for BORTOLETTO 92.

⁵ BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D and $D^*(2010)$. The authors also find the product branching fraction into $D^{**} \pi$ followed by $D^{**} \rightarrow D^*(2010) \pi$ to be $0.0014^{+0.0008}_{-0.0006} \pm 0.0003$ where D^{**} represents all orbitally excited D mesons.

⁶ ALBRECHT 87C use PDG 86 branching ratios for D and $D^*(2010)$ and assume $B(\Upsilon(4S) \rightarrow B^+ B^-) = 55\%$ and $B(\Upsilon(4S) \rightarrow B^0 \bar{B}^0) = 45\%$. Superseded by ALBRECHT 90J.

NODE=S041R2
NODE=S041R2

NODE=S041R2;LINKAGE=AB
NODE=S041R2;LINKAGE=EF

NODE=S041R2;LINKAGE=9B

NODE=S041R2;LINKAGE=A

NODE=S041R2;LINKAGE=B9

NODE=S041R2;LINKAGE=B

$$\Gamma(\bar{D}_1(2420)^0 \pi^+, \bar{D}_1^0 \rightarrow D^*(2010)^- \pi^+)/\Gamma(\bar{D}^0 \pi^+ \pi^+ \pi^-) \quad \Gamma_{80}/\Gamma_{74}$$

| VALUE (units 10^{-2}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

| | | | |
|------------------------|-------------------|-----|--------------------|
| 9.3 ± 1.6 ± 0.9 | ¹ AAIJ | 11E | LHCB pp at 7 TeV |
|------------------------|-------------------|-----|--------------------|

¹ AAIJ 11E reports $(9.3 \pm 1.6 \pm 0.9) \times 10^{-2}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{D}_1(2420)^0 \pi^+, \bar{D}_1^0 \rightarrow D^*(2010)^- \pi^+)/\Gamma(B^+ \rightarrow \bar{D}^0 \pi^+ \pi^+ \pi^-)] \times [B(D^*(2010)^+ \rightarrow D^0 \pi^+)]$ assuming $B(D^*(2010)^+ \rightarrow D^0 \pi^+) = (67.7 \pm 0.5) \times 10^{-2}$.

NODE=S041C69
NODE=S041C69

NODE=S041C69;LINKAGE=AA

$\Gamma(D^- \pi^+ \pi^+)/\Gamma_{\text{total}}$ Γ_{81}/Γ

| VALUE (units 10^{-3}) | CL% EVTS | DOCUMENT ID | TECN | COMMENT |
|---|----------|---------------------------|-----------|------------------------------------|
| 1.07±0.05 OUR AVERAGE | | | | |
| 1.08±0.03±0.05 | | ¹ AUBERT | 09AB BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 1.02±0.04±0.15 | | ¹ ABE | 04D BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| <1.4 | 90 | ² ALAM | 94 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| <7 | 90 | ³ BORTOLETTO92 | CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 2.5 $\begin{smallmatrix} +4.1 & +2.4 \\ -2.3 & -0.8 \end{smallmatrix}$ | 1 | ⁴ BEBEK | 87 CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R14
NODE=S041R14¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041R14;LINKAGE=EP
NODE=S041R14;LINKAGE=CC² ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the Mark III $B(D^+ \rightarrow K^- 2\pi^+)$.³ BORTOLETTO 92 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D . The product branching fraction into $D_0^*(2340)\pi$ followed by $D_0^*(2340) \rightarrow D\pi$ is < 0.005 at 90%CL and into $D_2^*(2460)$ followed by $D_2^*(2460) \rightarrow D\pi$ is < 0.004 at 90%CL.

NODE=S041R14;LINKAGE=B9

⁴ BEBEK 87 assume the $\Upsilon(4S)$ decays 43% to $B^0 \bar{B}^0$. $B(D^- \rightarrow K^+ \pi^- \pi^-) = (9.1 \pm 1.3 \pm 0.4)\%$ is assumed.

NODE=S041R14;LINKAGE=A

 $\Gamma(D^+ K^0)/\Gamma_{\text{total}}$ Γ_{82}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|-------------------------------|----------|------------------------------------|
| <2.9 | 90 | ¹ DEL-AMO-SA...10K | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| <5.0 | 90 | ¹ AUBERT,B | 05E BABR | Repl. by DEL-AMO-SANCHEZ 10K |

NODE=S041Q47
NODE=S041Q47¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q47;LINKAGE=EP

 $\Gamma(D^+ K^{*0})/\Gamma_{\text{total}}$ Γ_{83}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|--|----------|------------------------------------|
| <1.8 (CL = 90%) | | [$< 3.0 \times 10^{-6}$ (CL = 90%) OUR 2012 BEST LIMIT] | | |
| <1.8 | 90 | AAIJ | 13R LHCB | pp at 7 TeV |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| <3.0 | 90 | ¹ DEL-AMO-SA...10K | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041P02
NODE=S041P02¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041P02;LINKAGE=EP

 $\Gamma(D^+ \bar{K}^{*0})/\Gamma_{\text{total}}$ Γ_{84}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|----------|---------------|
| <1.4 | 90 | AAIJ | 13R LHCB | pp at 7 TeV |

NODE=S041C76
NODE=S041C76 $\Gamma(\bar{D}^*(2007)^0 \pi^+)/\Gamma_{\text{total}}$ Γ_{85}/Γ

| VALUE (units 10^{-3}) | EVTS | DOCUMENT ID | TECN | COMMENT |
|---|------|---------------------------|----------|------------------------------------|
| 5.18±0.26 OUR AVERAGE | | | | |
| 5.52±0.17±0.42 | | ¹ AUBERT | 07H BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 5.5 ±0.4 ±0.2 | | ^{2,3} AUBERT,BE | 06J BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 4.34±0.47±0.18 | | ⁴ BRANDENB... | 98 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 5.2 ±0.7 ±0.7 | 71 | ⁵ ALAM | 94 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 7.2 ±1.8 ±1.6 | | ⁶ BORTOLETTO92 | CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 4.0 ±1.4 ±1.2 | 9 | ⁶ ALBRECHT | 90J ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| 2.7 ±4.4 | | ⁷ BEBEK | 87 CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R15
NODE=S041R15¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041R15;LINKAGE=EP
NODE=S041R15;LINKAGE=AR² AUBERT,BE 06J reports $[\Gamma(B^+ \rightarrow \bar{D}^*(2007)^0 \pi^+)/\Gamma_{\text{total}}] / [B(B^+ \rightarrow \bar{D}^0 \pi^+)] = 1.14 \pm 0.07 \pm 0.04$ which we multiply by our best value $B(B^+ \rightarrow \bar{D}^0 \pi^+) = (4.81 \pm 0.15) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.³ Uses a missing-mass method. Does not depend on D branching fractions or B^+/B^0 production rates.

NODE=S041R15;LINKAGE=RT

⁴ BRANDENBURG 98 assume equal production of B^+ and B^0 at $\Upsilon(4S)$ and use the D^* reconstruction technique. The first error is their experiment's error and the second error is the systematic error from the PDG 96 value of $B(D^* \rightarrow D\pi)$.

NODE=S041R15;LINKAGE=BG

⁵ ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II $B(D^*(2007)^0 \rightarrow D^0 \pi^0)$ and absolute $B(D^0 \rightarrow K^- \pi^+)$ and the PDG 1992 $B(D^0 \rightarrow K^- \pi^+ \pi^0)/B(D^0 \rightarrow K^- \pi^+)$ and $B(D^0 \rightarrow K^- 2\pi^+ \pi^-)/B(D^0 \rightarrow K^- \pi^+)$.

NODE=S041R15;LINKAGE=EB

⁶ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D and $D^*(2010)$.

⁷ This is a derived branching ratio, using the inclusive pion spectrum and other two-body B decays. BEBEK 87 assume the $\Upsilon(4S)$ decays 43% to $B^0\bar{B}^0$.

$\Gamma(\bar{D}^*(2007)^0 \omega \pi^+)/\Gamma_{\text{total}}$ Γ_{88}/Γ

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|----------------------------|------|-----------------------------------|
| 0.0045 ± 0.0010 ± 0.0007 | ¹ ALEXANDER 01B | CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. The signal is consistent with all observed $\omega\pi^+$ having proceeded through the ρ^+ resonance at mass $1349 \pm 25^{+10}_{-5}$ MeV and width $547 \pm 86^{+46}_{-45}$ MeV.

NODE=S041R15;LINKAGE=B9

NODE=S041R15;LINKAGE=A

NODE=S041B53
NODE=S041B53

NODE=S041B53;LINKAGE=AK

$\Gamma(\bar{D}^*(2007)^0 \rho^+)/\Gamma_{\text{total}}$ Γ_{89}/Γ

| VALUE | EVTS | DOCUMENT ID | TECN | COMMENT |
|------------------------------------|------|-------------|------|---------|
| 0.0098 ± 0.0017 OUR AVERAGE | | | | |

0.0098 ± 0.0006 ± 0.0017 ¹ CSORNA 03 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$

0.010 ± 0.006 ± 0.004 ⁷ ² ALBRECHT 90J ARG $e^+e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.0168 ± 0.0021 ± 0.0028 ⁸⁶ ³ ALAM 94 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^0 and B^+ at the $\Upsilon(4S)$ resonance. The second error combines the systematic and theoretical uncertainties in quadrature. CSORNA 03 includes data used in ALAM 94. A full angular fit to three complex helicity amplitudes is performed.

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D and $D^*(2010)$.

³ ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II $B(D^*(2007)^0 \rightarrow D^0\pi^0)$ and absolute $B(D^0 \rightarrow K^-\pi^+)$ and the PDG 1992 $B(D^0 \rightarrow K^-\pi^+\pi^0)/B(D^0 \rightarrow K^-\pi^+)$ and $B(D^0 \rightarrow K^-2\pi^+\pi^-)/B(D^0 \rightarrow K^-\pi^+)$. The nonresonant $\pi^+\pi^0$ contribution under the ρ^+ is negligible.

NODE=S041S41
NODE=S041S41

NODE=S041S41;LINKAGE=EP

NODE=S041S41;LINKAGE=B9

NODE=S041S41;LINKAGE=BE

$\Gamma(\bar{D}^*(2007)^0 K^+)/\Gamma_{\text{total}}$ Γ_{90}/Γ

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------------|-------------|------|---------|
| 4.20 ± 0.34 OUR AVERAGE | | | |

4.21 $^{+0.30}_{-0.26}$ ± 0.21 ¹ AUBERT 05N BABR $e^+e^- \rightarrow \Upsilon(4S)$

4.0 ± 1.1 ± 0.2 ² ABE 01I BELL $e^+e^- \rightarrow \Upsilon(4S)$

¹ AUBERT 05N reports $[\Gamma(B^+ \rightarrow \bar{D}^*(2007)^0 K^+)/\Gamma_{\text{total}}] / [B(B^+ \rightarrow \bar{D}^*(2007)^0 \pi^+)] = 0.0813 \pm 0.0040^{+0.0042}_{-0.0031}$ which we multiply by our best value $B(B^+ \rightarrow \bar{D}^*(2007)^0 \pi^+) = (5.18 \pm 0.26) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

² ABE 01I reports $[\Gamma(B^+ \rightarrow \bar{D}^*(2007)^0 K^+)/\Gamma_{\text{total}}] / [B(B^+ \rightarrow \bar{D}^*(2007)^0 \pi^+)] = 0.078 \pm 0.019 \pm 0.009$ which we multiply by our best value $B(B^+ \rightarrow \bar{D}^*(2007)^0 \pi^+) = (5.18 \pm 0.26) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041B48
NODE=S041B48

NODE=S041B48;LINKAGE=AU

NODE=S041B48;LINKAGE=EB

$\Gamma(\bar{D}_{CP(+1)}^{*0} K^+)/\Gamma_{\text{total}}$ Γ_{91}/Γ

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|--|--------------------------|------|-----------------------------------|
| 2.75 ± 0.29 $^{+0.23}_{-0.22}$ | ¹ AUBERT 08BF | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ AUBERT 08BF reports $[\Gamma(B^+ \rightarrow \bar{D}_{CP(+1)}^{*0} K^+)/\Gamma_{\text{total}}] / [B(B^+ \rightarrow \bar{D}^*(2007)^0 K^+)] = 0.655 \pm 0.065 \pm 0.020$ which we multiply by our best value $B(B^+ \rightarrow \bar{D}^*(2007)^0 K^+) = (4.20 \pm 0.34) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041C47
NODE=S041C47

NODE=S041C47;LINKAGE=AU

$\Gamma(\bar{D}_{CP(+1)}^{*0} K^+)/\Gamma(\bar{D}_{CP(+1)}^{*0} \pi^+)$ Γ_{91}/Γ_{86}

| VALUE | DOCUMENT ID | TECN | COMMENT |
|----------------------------------|-------------|------|---------|
| 0.095 ± 0.017 OUR AVERAGE | | | |

0.11 ± 0.02 ± 0.02 ¹ ABE 06 BELL $e^+e^- \rightarrow \Upsilon(4S)$

0.086 ± 0.021 ± 0.007 ² AUBERT 05N BABR $e^+e^- \rightarrow \Upsilon(4S)$

¹ Reports a double ratio of $B(B^+ \rightarrow D_{CP(+1)}^{*0} K^+)/B(B^+ \rightarrow D_{CP(+1)}^{*0} \pi^+)$ and $B(B^+ \rightarrow \bar{D}^{*0} K^+)/B(B^+ \rightarrow \bar{D}^{*0} \pi^+)$, $1.41 \pm 0.25 \pm 0.06$. We multiply by our best value of $B(B^+ \rightarrow \bar{D}^{*0} K^+)/B(B^+ \rightarrow \bar{D}^{*0} \pi^+) = 0.080 \pm 0.011$. Our first error is their experiment's error and the second error is systematic error from using our best value.

² Uses $D^{*0} \rightarrow D^0\pi^0$ with D^0 reconstructed in the CP -even eigenstates K^+K^- and $\pi^+\pi^-$.

NODE=S041Q71
NODE=S041Q71

NODE=S041Q71;LINKAGE=AB

NODE=S041Q71;LINKAGE=AU

$\Gamma(\bar{D}_{CP(-1)}^{*0} K^+)/\Gamma_{\text{total}}$ Γ_{92}/Γ VALUE (units 10^{-4})

DOCUMENT ID TECN COMMENT

 $2.31 \pm 0.27^{+0.20}_{-0.18}$ ¹ AUBERT 08BF BABR $e^+ e^- \rightarrow \Upsilon(4S)$

¹ AUBERT 08BF reports $[\Gamma(B^+ \rightarrow \bar{D}_{CP(-1)}^{*0} K^+)/\Gamma_{\text{total}}] / [B(B^+ \rightarrow \bar{D}^*(2007)^0 K^+)] = 0.55 \pm 0.06 \pm 0.02$ which we multiply by our best value $B(B^+ \rightarrow \bar{D}^*(2007)^0 K^+) = (4.20 \pm 0.34) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041C48
NODE=S041C48

NODE=S041C48;LINKAGE=AU

 $\Gamma(\bar{D}_{CP(-1)}^{*0} K^+)/\Gamma(D_{CP(-1)}^{*0} \pi^+)$ Γ_{92}/Γ_{87}

VALUE

DOCUMENT ID TECN COMMENT

 $0.09 \pm 0.03 \pm 0.01$ ¹ ABE 06 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

¹ Reports a double ratio of $B(B^+ \rightarrow (D_{CP(-1)}^{*0})^0 K^+)/B(B^+ \rightarrow (D_{CP(-1)}^{*0})^0 \pi^+)$ and $B(B^+ \rightarrow \bar{D}^{*0} K^+)/B(B^+ \rightarrow \bar{D}^{*0} \pi^+)$, $1.15 \pm 0.31 \pm 0.12$. We multiply by our best value of $B(B^+ \rightarrow \bar{D}^{*0} K^+)/B(B^+ \rightarrow \bar{D}^{*0} \pi^+) = 0.080 \pm 0.011$. Our first error is their experiment's error and the second error is systematic error from using our best value.

NODE=S041Q81
NODE=S041Q81

NODE=S041Q81;LINKAGE=AB

 $\Gamma(\bar{D}^*(2007)^0 K^*(892)^+)/\Gamma_{\text{total}}$ Γ_{93}/Γ VALUE (units 10^{-4})

DOCUMENT ID TECN COMMENT

8.1 ± 1.4 OUR AVERAGE

8.3 ± 1.1 ± 1.0

¹ AUBERT 04K BABR $e^+ e^- \rightarrow \Upsilon(4S)$

7.2 ± 2.2 ± 2.6

² MAHAPATRA 02 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and an unpolarized final state.NODE=S041B58
NODE=S041B58NODE=S041B58;LINKAGE=AU
NODE=S041B58;LINKAGE=PE $\Gamma(\bar{D}^*(2007)^0 K^+ \bar{K}^0)/\Gamma_{\text{total}}$ Γ_{94}/Γ VALUE (units 10^{-4})

CL%

DOCUMENT ID TECN COMMENT

<10.6

90

¹ DRUTSKOY 02 BELL $e^+ e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041B65
NODE=S041B65

NODE=S041B65;LINKAGE=EP

 $\Gamma(\bar{D}^*(2007)^0 K^+ K^*(892)^0)/\Gamma_{\text{total}}$ Γ_{95}/Γ VALUE (units 10^{-4})

DOCUMENT ID TECN COMMENT

15.3 ± 3.1 ± 2.9¹ DRUTSKOY 02 BELL $e^+ e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041B67
NODE=S041B67

NODE=S041B67;LINKAGE=EP

 $\Gamma(\bar{D}^*(2007)^0 \pi^+ \pi^+ \pi^-)/\Gamma_{\text{total}}$ Γ_{96}/Γ VALUE (units 10^{-2})

EVTS

DOCUMENT ID TECN COMMENT

1.03 ± 0.12 OUR AVERAGE

1.055 ± 0.047 ± 0.129

¹ MAJUMDER 04 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

0.94 ± 0.20 ± 0.17

48 ^{2,3} ALAM 94 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II $B(D^*(2007)^0 \rightarrow D^0 \pi^0)$ and absolute $B(D^0 \rightarrow K^- \pi^+)$ and the PDG 1992 $B(D^0 \rightarrow K^- \pi^+ \pi^0)/B(D^0 \rightarrow K^- \pi^+)$ and $B(D^0 \rightarrow K^- 2\pi^+ \pi^-)/B(D^0 \rightarrow K^- \pi^+)$.³ The three pion mass is required to be between 1.0 and 1.6 GeV consistent with an a_1 meson. (If this channel is dominated by a_1^+ , the branching ratio for $\bar{D}^{*0} a_1^+$ is twice that for $\bar{D}^{*0} \pi^+ \pi^+ \pi^-$.)NODE=S041S92
NODE=S041S92NODE=S041S92;LINKAGE=EP
NODE=S041S92;LINKAGE=EB

NODE=S041S92;LINKAGE=EC

 $\Gamma(\bar{D}^*(2007)^0 a_1(1260)^+)/\Gamma_{\text{total}}$ Γ_{97}/Γ

VALUE

DOCUMENT ID TECN COMMENT

0.0188 ± 0.0040 ± 0.0034^{1,2} ALAM 94 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ ¹ ALAM 94 value is twice their $\Gamma(\bar{D}^*(2007)^0 \pi^+ \pi^+ \pi^-)/\Gamma_{\text{total}}$ value based on their observation that the three pions are dominantly in the $a_1(1260)$ mass range 1.0 to 1.6 GeV.² ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II $B(D^*(2007)^0 \rightarrow D^0 \pi^0)$ and absolute $B(D^0 \rightarrow K^- \pi^+)$ and the PDG 1992 $B(D^0 \rightarrow K^- \pi^+ \pi^0)/B(D^0 \rightarrow K^- \pi^+)$ and $B(D^0 \rightarrow K^- 2\pi^+ \pi^-)/B(D^0 \rightarrow K^- \pi^+)$.NODE=S041S96
NODE=S041S96

NODE=S041S96;LINKAGE=A

NODE=S041S96;LINKAGE=EB

$$\Gamma(\bar{D}^*(2007)^0 \pi^- \pi^+ \pi^+ \pi^0) / \Gamma_{\text{total}}$$

 Γ_{98}/Γ

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|----------------------------|------|------------------------------------|
| 0.0180 ± 0.0024 ± 0.0027 | ¹ ALEXANDER 01B | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B52
 NODE=S041B52

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. The signal is consistent with all observed $\omega \pi^+$ having proceeded through the ρ'^+ resonance at mass $1349 \pm 25^{+10}_{-5}$ MeV and width $547 \pm 86^{+46}_{-45}$ MeV.

NODE=S041B52;LINKAGE=AK

$$\Gamma(\bar{D}^{*0} 3\pi^+ 2\pi^-) / \Gamma_{\text{total}}$$

 Γ_{99}/Γ

| VALUE (units 10^{-3}) | DOCUMENT ID | TECN | COMMENT |
|---------------------------|--------------------------|------|------------------------------------|
| 5.67 ± 0.91 ± 0.85 | ¹ MAJUMDER 04 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q23
 NODE=S041Q23

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q23;LINKAGE=EP

$$\Gamma(D^*(2010)^+ \pi^0) / \Gamma_{\text{total}}$$

 Γ_{100}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-----------------------------------|-----|--------------------------|------|------------------------------------|
| < 3.6 × 10⁻⁶ | | ¹ IWABUCHI 08 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B15
 NODE=S041B15

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|--------------------------|----|-----------------------------|------|------------------------------------|
| < 1.7 × 10 ⁻⁴ | 90 | ² BRANDENB... 98 | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------------|----|-----------------------------|------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B15;LINKAGE=EP

² BRANDENBURG 98 assume equal production of B^+ and B^0 at $\Upsilon(4S)$ and use the D^* partial reconstruction technique. The first error is their experiment's error and the second error is the systematic error from the PDG 96 value of $B(D^* \rightarrow D\pi)$.

NODE=S041B15;LINKAGE=BG

$$\Gamma(D^*(2010)^+ K^0) / \Gamma_{\text{total}}$$

 Γ_{101}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-----------------------------------|-----|---------------------------|------|------------------------------------|
| < 9.0 × 10⁻⁶ | 90 | ¹ AUBERT,B 05E | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B45
 NODE=S041B45

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|--------------------------|----|-------------------------|------|------------------------------------|
| < 9.5 × 10 ⁻⁵ | 90 | ¹ GRITSAN 01 | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------------|----|-------------------------|------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B45;LINKAGE=EP

$$\Gamma(D^*(2010)^- \pi^+ \pi^+ \pi^0) / \Gamma_{\text{total}}$$

 Γ_{102}/Γ

| VALUE | EVTS | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|------|---------------------------|------|------------------------------------|
| 0.0152 ± 0.0071 ± 0.0001 | 26 | ¹ ALBRECHT 90J | ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R12
 NODE=S041R12

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-----------------------|----|---------------------------|-----|------------------------------------|
| 0.043 ± 0.013 ± 0.026 | 24 | ² ALBRECHT 87C | ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|----|---------------------------|-----|------------------------------------|

¹ ALBRECHT 90J reports $0.018 \pm 0.007 \pm 0.005$ from a measurement of $[\Gamma(B^+ \rightarrow D^*(2010)^- \pi^+ \pi^+ \pi^0) / \Gamma_{\text{total}}] \times [B(D^*(2010)^+ \rightarrow D^0 \pi^+)]$ assuming $B(D^*(2010)^+ \rightarrow D^0 \pi^+) = 0.57 \pm 0.06$, which we rescale to our best value $B(D^*(2010)^+ \rightarrow D^0 \pi^+) = (67.7 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D .

NODE=S041R12;LINKAGE=B9

² ALBRECHT 87C use PDG 86 branching ratios for D and $D^*(2010)$ and assume $B(\Upsilon(4S) \rightarrow B^+ B^-) = 55\%$ and $B(\Upsilon(4S) \rightarrow B^0 \bar{B}^0) = 45\%$. Superseded by ALBRECHT 90J.

NODE=S041R12;LINKAGE=A

$$\Gamma(D^*(2010)^- \pi^+ \pi^+ \pi^+ \pi^-) / \Gamma_{\text{total}}$$

 Γ_{103}/Γ

| VALUE (units 10^{-3}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---------------------------|-----|--------------------------|------|------------------------------------|
| 2.56 ± 0.26 ± 0.33 | | ¹ MAJUMDER 04 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R64
 NODE=S041R64

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|------|----|---------------------------|-----|------------------------------------|
| < 10 | 90 | ² ALBRECHT 90J | ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------|----|---------------------------|-----|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R64;LINKAGE=EP

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and uses Mark III branching fractions for the D and $D^*(2010)$.

NODE=S041R64;LINKAGE=B9

$$\Gamma(\bar{D}^{*0} \pi^+) / \Gamma_{\text{total}}$$

 Γ_{104}/Γ

D^{*0} represents an excited state with mass $2.2 < M < 2.8$ GeV/ c^2 .

| VALUE (units 10^{-3}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|------------------------------|------|------------------------------------|
| 5.9 ± 1.3 ± 0.2 | ^{1,2} AUBERT,BE 06J | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R03
 NODE=S041R03
 NODE=S041R03

¹ AUBERT,BE 06J reports $[\Gamma(B^+ \rightarrow \bar{D}^{*0} \pi^+) / \Gamma_{\text{total}}] / [B(B^+ \rightarrow \bar{D}^0 \pi^+)] = 1.22 \pm 0.13 \pm 0.23$ which we multiply by our best value $B(B^+ \rightarrow \bar{D}^0 \pi^+) = (4.81 \pm 0.15) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041R03;LINKAGE=AR

² Uses a missing-mass method. Does not depend on D branching fractions or B^+ / B^0 production rates.

NODE=S041R03;LINKAGE=RT

$$\Gamma(\bar{D}_1^*(2420)^0 \pi^+) / \Gamma_{\text{total}} \quad \Gamma_{105} / \Gamma$$

| VALUE | EVTS | DOCUMENT ID | TECN | COMMENT |
|-------|------|-------------|------|---------|
|-------|------|-------------|------|---------|

0.0015 ± 0.0006 OUR AVERAGE Error includes scale factor of 1.3.

| | | | | |
|--------------------------|---|-------------------|---------|------------------------------------|
| 0.0011 ± 0.0005 ± 0.0002 | 8 | ¹ ALAM | 94 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------------|---|-------------------|---------|------------------------------------|

| | | | | |
|--------------------------|--|-----------------------|---------|------------------------------------|
| 0.0025 ± 0.0007 ± 0.0006 | | ² ALBRECHT | 94D ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------------|--|-----------------------|---------|------------------------------------|

¹ ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II $B(D^*(2010)^+ \rightarrow D^0 \pi^+)$ and absolute $B(D^0 \rightarrow K^- \pi^+)$ and the PDG 1992 $B(D^0 \rightarrow K^- \pi^+ \pi^0) / B(D^0 \rightarrow K^- \pi^+)$ and assuming $B(D_1(2420)^0 \rightarrow D^*(2010)^+ \pi^-) = 67\%$.

² ALBRECHT 94D assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II $B(D^*(2010)^+ \rightarrow D^0 \pi^+)$ assuming $B(D_1(2420)^0 \rightarrow D^*(2010)^+ \pi^-) = 67\%$.

NODE=S041R93
NODE=S041R93

NODE=S041R93;LINKAGE=EG

NODE=S041R93;LINKAGE=A

$$\Gamma(\bar{D}_1(2420)^0 \pi^+ \times B(\bar{D}_1^0 \rightarrow \bar{D}^0 \pi^+ \pi^-)) / \Gamma_{\text{total}} \quad \Gamma_{106} / \Gamma$$

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

2.5 $^{+1.7}_{-1.4}$ OUR FIT Error includes scale factor of 4.0.

| | | | |
|--|------------------|----------|------------------------------------|
| 1.85 ± 0.29 $^{+0.35}_{-0.55}$ | ¹ ABE | 05A BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--|------------------|----------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q82
NODE=S041Q82

NODE=S041Q82;LINKAGE=EP

$$\Gamma(\bar{D}_1(2420)^0 \pi^+ \times B(\bar{D}_1^0 \rightarrow \bar{D}^0 \pi^+ \pi^-)) / \Gamma(\bar{D}^0 \pi^+ \pi^+ \pi^-) \quad \Gamma_{106} / \Gamma_{74}$$

| VALUE (units 10^{-2}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

4.4 $^{+3.3}_{-2.6}$ OUR FIT Error includes scale factor of 4.0.

| | | | |
|-------------------------|------|----------|---------------|
| 10.3 ± 1.5 ± 0.9 | AAIJ | 11E LHCB | pp at 7 TeV |
|-------------------------|------|----------|---------------|

NODE=S041C67
NODE=S041C67

$$\Gamma(\bar{D}_1(2420)^0 \pi^+ \times B(\bar{D}_1^0 \rightarrow \bar{D}^0 \pi^+ \pi^- (\text{nonresonant}))) / \Gamma(\bar{D}^0 \pi^+ \pi^+ \pi^-) \quad \Gamma_{107} / \Gamma_{74}$$

| VALUE (units 10^{-2}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

| | | | |
|------------------------|-------------------|----------|---------------|
| 4.0 ± 0.7 ± 0.5 | ¹ AAIJ | 11E LHCB | pp at 7 TeV |
|------------------------|-------------------|----------|---------------|

¹ Excludes decays where $\bar{D}_1(2420)^0 \rightarrow D^*(2010)^- \pi^+$.

NODE=S041C68
NODE=S041C68

NODE=S041C68;LINKAGE=AA

$$\Gamma(\bar{D}_2^*(2462)^0 \pi^+ \times B(\bar{D}_2^*(2462)^0 \rightarrow D^- \pi^+)) / \Gamma_{\text{total}} \quad \Gamma_{108} / \Gamma$$

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

3.5 ± 0.4 OUR AVERAGE

| | | | |
|-----------------|---------------------|-----------|------------------------------------|
| 3.5 ± 0.2 ± 0.4 | ¹ AUBERT | 09AB BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------|---------------------|-----------|------------------------------------|

| | | | |
|------------------|------------------|----------|------------------------------------|
| 3.4 ± 0.3 ± 0.72 | ¹ ABE | 04D BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------------------|------------------|----------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q01
NODE=S041Q01

NODE=S041Q01;LINKAGE=EP

$$\Gamma(\bar{D}_2^*(2462)^0 \pi^+ \times B(\bar{D}_2^{*0} \rightarrow \bar{D}^0 \pi^- \pi^+)) / \Gamma(\bar{D}^0 \pi^+ \pi^+ \pi^-) \quad \Gamma_{109} / \Gamma_{74}$$

| VALUE (units 10^{-2}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

| | | | |
|------------------------|------|----------|---------------|
| 4.0 ± 1.0 ± 0.4 | AAIJ | 11E LHCB | pp at 7 TeV |
|------------------------|------|----------|---------------|

NODE=S041C70
NODE=S041C70

$$\Gamma(\bar{D}_2^*(2462)^0 \pi^+ \times B(\bar{D}_2^{*0} \rightarrow \bar{D}^0 \pi^- \pi^+ (\text{nonresonant}))) / \Gamma(\bar{D}^0 \pi^+ \pi^+ \pi^-) \quad \Gamma_{110} / \Gamma_{74}$$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

| | | | | |
|-----------------------------------|----|-------------------|----------|---------------|
| < 3.0 × 10⁻² | 90 | ¹ AAIJ | 11E LHCB | pp at 7 TeV |
|-----------------------------------|----|-------------------|----------|---------------|

¹ Excludes decays where $\bar{D}_2^*(2462)^0 \rightarrow D^*(2010)^- \pi^+$.

NODE=S041C72
NODE=S041C72

NODE=S041C72;LINKAGE=AA

$$\Gamma(\bar{D}_2^*(2462)^0 \pi^+ \times B(\bar{D}_2^{*0} \rightarrow D^*(2010)^- \pi^+)) / \Gamma(\bar{D}^0 \pi^+ \pi^+ \pi^-) \quad \Gamma_{111} / \Gamma_{74}$$

| VALUE (units 10^{-2}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

| | | | |
|------------------------|-------------------|----------|---------------|
| 3.9 ± 1.2 ± 0.4 | ¹ AAIJ | 11E LHCB | pp at 7 TeV |
|------------------------|-------------------|----------|---------------|

¹ Uses $B(D^*(2010)^+ \rightarrow D^0 \pi^+) = (67.7 \pm 0.5)\%$.

NODE=S041C71
NODE=S041C71

NODE=S041C71;LINKAGE=AA

$$\Gamma(\bar{D}_0^*(2400)^0 \pi^+ \times B(\bar{D}_0^*(2400)^0 \rightarrow D^- \pi^+)) / \Gamma_{\text{total}} \quad \Gamma_{112} / \Gamma$$

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

6.4 ± 1.4 OUR AVERAGE

| | | | |
|-----------------|---------------------|-----------|------------------------------------|
| 6.8 ± 0.3 ± 2.0 | ¹ AUBERT | 09AB BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------|---------------------|-----------|------------------------------------|

| | | | |
|-----------------|------------------|----------|------------------------------------|
| 6.1 ± 0.6 ± 1.8 | ¹ ABE | 04D BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------|------------------|----------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q02
NODE=S041Q02

NODE=S041Q02;LINKAGE=EP

$$\Gamma(\bar{D}_1(2421)^0 \pi^+ \times B(\bar{D}_1(2421)^0 \rightarrow D^{*-} \pi^+)) / \Gamma_{\text{total}} \quad \Gamma_{113} / \Gamma$$

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|---|-------------|----------|------------------------------------|
| $6.8 \pm 0.7 \pm 1.3$ | 1 ABE | 04D BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q03
NODE=S041Q03

NODE=S041Q03;LINKAGE=AB

$$\Gamma(\bar{D}_2^*(2462)^0 \pi^+ \times B(\bar{D}_2^*(2462)^0 \rightarrow D^{*-} \pi^+)) / \Gamma_{\text{total}} \quad \Gamma_{114} / \Gamma$$

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|---|-------------|----------|------------------------------------|
| $1.8 \pm 0.3 \pm 0.4$ | 1 ABE | 04D BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q04
NODE=S041Q04

NODE=S041Q04;LINKAGE=AB

$$\Gamma(\bar{D}_1^*(2427)^0 \pi^+ \times B(\bar{D}_1^*(2427)^0 \rightarrow D^{*-} \pi^+)) / \Gamma_{\text{total}} \quad \Gamma_{115} / \Gamma$$

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|---|-------------|----------|------------------------------------|
| $5.0 \pm 0.4 \pm 1.1$ | 1 ABE | 04D BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q05
NODE=S041Q05

NODE=S041Q05;LINKAGE=AB

$$\Gamma(\bar{D}_1(2420)^0 \pi^+ \times B(\bar{D}_1^0 \rightarrow \bar{D}^{*0} \pi^+ \pi^-)) / \Gamma_{\text{total}} \quad \Gamma_{116} / \Gamma$$

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|-------------------------------|-----|-------------|----------|------------------------------------|
| < 0.06 | 90 | 1 ABE | 05A BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q83
NODE=S041Q83

NODE=S041Q83;LINKAGE=EP

$$\Gamma(\bar{D}_1^*(2420)^0 \rho^+) / \Gamma_{\text{total}} \quad \Gamma_{117} / \Gamma$$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|-----|-------------|---------|------------------------------------|
| < 0.0014 | 90 | 1 ALAM | 94 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II $B(D^*(2010)^+ \rightarrow D^0 \pi^+)$ assuming $B(D_1(2420)^0 \rightarrow D^*(2010)^+ \pi^-) = 67\%$.

NODE=S041R94
NODE=S041R94

NODE=S041R94;LINKAGE=EG

$$\Gamma(\bar{D}_2^*(2460)^0 \pi^+) / \Gamma_{\text{total}} \quad \Gamma_{118} / \Gamma$$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|-----|-------------|---------|------------------------------------|
| < 0.0013 | 90 | 1 ALAM | 94 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|------------|----|------------|---------|------------------------------------|
| < 0.0028 | 90 | 2 ALAM | 94 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 0.0023 | 90 | 3 ALBRECHT | 94D ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the Mark III $B(D^+ \rightarrow K^- 2\pi^+)$ and $B(D_2^*(2460)^0 \rightarrow D^+ \pi^-) = 30\%$.

² ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the Mark III $B(D^+ \rightarrow K^- 2\pi^+)$, the CLEO II $B(D^*(2010)^+ \rightarrow D^0 \pi^+)$ and $B(D_2^*(2460)^0 \rightarrow D^*(2010)^+ \pi^-) = 20\%$.

³ ALBRECHT 94D assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the CLEO II $B(D^*(2010)^+ \rightarrow D^0 \pi^+)$ and $B(D_2^*(2460)^0 \rightarrow D^*(2010)^+ \pi^-) = 30\%$.

NODE=S041R91
NODE=S041R91

OCCUR=2

NODE=S041R91;LINKAGE=CD

NODE=S041R91;LINKAGE=CE

NODE=S041R91;LINKAGE=A

$$\Gamma(\bar{D}_2^*(2460)^0 \pi^+ \times B(\bar{D}_2^{*0} \rightarrow \bar{D}^{*0} \pi^+ \pi^-)) / \Gamma_{\text{total}} \quad \Gamma_{119} / \Gamma$$

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|-------------------------------|-----|-------------|----------|------------------------------------|
| < 0.22 | 90 | 1 ABE | 05A BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q84
NODE=S041Q84

NODE=S041Q84;LINKAGE=EP

$$\Gamma(\bar{D}_2^*(2460)^0 \rho^+) / \Gamma_{\text{total}} \quad \Gamma_{120} / \Gamma$$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|-----|-------------|---------|------------------------------------|
| < 0.0047 | 90 | 1 ALAM | 94 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 0.005 | 90 | 2 ALAM | 94 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the Mark III $B(D^+ \rightarrow K^- 2\pi^+)$ and $B(D_2^*(2460)^0 \rightarrow D^+ \pi^-) = 30\%$.

² ALAM 94 assume equal production of B^+ and B^0 at the $\Upsilon(4S)$ and use the Mark III $B(D^+ \rightarrow K^- 2\pi^+)$, the CLEO II $B(D^*(2010)^+ \rightarrow D^0 \pi^+)$ and $B(D_2^*(2460)^0 \rightarrow D^*(2010)^+ \pi^-) = 20\%$.

NODE=S041R92
NODE=S041R92

OCCUR=2

NODE=S041R92;LINKAGE=CD

NODE=S041R92;LINKAGE=CE

$\Gamma(\bar{D}^0 D_s^+)/\Gamma_{\text{total}}$ Γ_{121}/Γ

| VALUE | EVTS | DOCUMENT ID | TECN | COMMENT |
|------------------------------------|------|----------------|----------|------------------------------------|
| 0.0100 ± 0.0017 OUR AVERAGE | | | | |
| 0.0095 ± 0.0020 ± 0.0008 | | 1 AUBERT | 06N BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.0098 ± 0.0026 ± 0.0009 | | 2 GIBAUT | 96 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.014 ± 0.008 ± 0.001 | | 3 ALBRECHT | 92G ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.013 ± 0.006 ± 0.001 | 5 | 4 BORTOLETTO90 | CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R39
 NODE=S041R39

¹ AUBERT 06N reports $(0.92 \pm 0.14 \pm 0.18) \times 10^{-2}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{D}^0 D_s^+)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.0462 \pm 0.0062$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041R39;LINKAGE=AN

² GIBAUT 96 reports $0.0126 \pm 0.0022 \pm 0.0025$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{D}^0 D_s^+)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.035$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041R39;LINKAGE=Z9

³ ALBRECHT 92G reports $0.024 \pm 0.012 \pm 0.004$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{D}^0 D_s^+)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes PDG 1990 D^0 branching ratios, e.g., $B(D^0 \rightarrow K^- \pi^+) = 3.71 \pm 0.25\%$.

NODE=S041R39;LINKAGE=CA

⁴ BORTOLETTO 90 reports 0.029 ± 0.013 from a measurement of $[\Gamma(B^+ \rightarrow \bar{D}^0 D_s^+)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.02$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041R39;LINKAGE=A

 $\Gamma(D_{s0}(2317)^+ \bar{D}^0 \times B(D_{s0}(2317)^+ \rightarrow D_s^+ \pi^0))/\Gamma_{\text{total}}$ Γ_{122}/Γ

| VALUE (units 10^{-3}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

NODE=S041C4
 NODE=S041C4

0.73^{+0.22}_{-0.17} OUR AVERAGE

| | | | |
|---|--------------|----------|------------------------------------|
| 0.80 ^{+0.35} _{-0.21} ± 0.07 | 1,2 AUBERT,B | 04S BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.65 ^{+0.26} _{-0.24} ± 0.06 | 1,3 KROKOVNY | 03B BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C4;LINKAGE=KR

² AUBERT,B 04S reports $(1.0 \pm 0.3^{+0.4}_{-0.2}) \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D_{s0}(2317)^+ \bar{D}^0 \times B(D_{s0}(2317)^+ \rightarrow D_s^+ \pi^0))/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.036 \pm 0.009$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041C4;LINKAGE=KT

³ KROKOVNY 03B reports $(0.81^{+0.30}_{-0.27} \pm 0.24) \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D_{s0}(2317)^+ \bar{D}^0 \times B(D_{s0}(2317)^+ \rightarrow D_s^+ \pi^0))/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.036 \pm 0.009$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041C4;LINKAGE=TB

 $\Gamma(D_{s0}(2317)^+ \bar{D}^0 \times B(D_{s0}(2317)^+ \rightarrow D_s^{*+} \gamma))/\Gamma_{\text{total}}$ Γ_{123}/Γ

| VALUE (units 10^{-3}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

NODE=S041Q40
 NODE=S041Q40

<0.76 90 ¹ KROKOVNY 03B BELL $e^+ e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q40;LINKAGE=KR

 $\Gamma(D_{s0}(2317)^+ \bar{D}^*(2007)^0 \times B(D_{s0}(2317)^+ \rightarrow D_s^+ \pi^0))/\Gamma_{\text{total}}$ Γ_{124}/Γ

| VALUE (units 10^{-3}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

NODE=S041Q19
 NODE=S041Q19

0.9 ± 0.6^{+0.4}_{-0.3} ¹ AUBERT,B 04S BABR $e^+ e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q19;LINKAGE=AU

$\Gamma(D_{sJ}(2457)^+\bar{D}^0)/\Gamma_{\text{total}}$ Γ_{125}/Γ VALUE (units 10^{-3})

DOCUMENT ID

TECN

COMMENT

NODE=S041C5
NODE=S041C5**3.1^{+1.0}_{-0.9} OUR AVERAGE**

| | | | | |
|-----------------------------|-------------------------|-----|------|-----------------------------------|
| $4.3 \pm 1.6 \pm 1.3$ | ¹ AUBERT | 06N | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| $4.6^{+1.8}_{-1.6} \pm 1.0$ | ^{2,3} AUBERT,B | 04S | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| $2.1^{+1.1}_{-0.9} \pm 0.5$ | ^{2,4} KROKOVNY | 03B | BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Uses a missing-mass method in the events that one of the B mesons is fully reconstructed.² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.³ AUBERT,B 04S reports $[\Gamma(B^+ \rightarrow D_{sJ}(2457)^+\bar{D}^0)/\Gamma_{\text{total}}] \times [B(D_{s1}(2460)^+ \rightarrow D_s^{*+}\pi^0)] = (2.2^{+0.8}_{-0.7} \pm 0.3) \times 10^{-3}$ which we divide by our best value $B(D_{s1}(2460)^+ \rightarrow D_s^{*+}\pi^0) = (48 \pm 11) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.⁴ KROKOVNY 03B reports $[\Gamma(B^+ \rightarrow D_{sJ}(2457)^+\bar{D}^0)/\Gamma_{\text{total}}] \times [B(D_{s1}(2460)^+ \rightarrow D_s^{*+}\pi^0)] = (1.0^{+0.5}_{-0.4} \pm 0.1) \times 10^{-3}$ which we divide by our best value $B(D_{s1}(2460)^+ \rightarrow D_s^{*+}\pi^0) = (48 \pm 11) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.NODE=S041C5;LINKAGE=AN
NODE=S041C5;LINKAGE=EP
NODE=S041C5;LINKAGE=KT

NODE=S041C5;LINKAGE=KU

 $\Gamma(D_{sJ}(2457)^+\bar{D}^0 \times B(D_{sJ}(2457)^+ \rightarrow D_s^+\gamma))/\Gamma_{\text{total}}$ Γ_{126}/Γ VALUE (units 10^{-3})

DOCUMENT ID

TECN

COMMENT

NODE=S041Q21
NODE=S041Q21**0.46^{+0.13}_{-0.11} OUR AVERAGE**

| | | | | |
|---------------------------------|-------------------------|-----|------|-----------------------------------|
| $0.48^{+0.19}_{-0.13} \pm 0.04$ | ^{1,2} AUBERT,B | 04S | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| $0.45^{+0.15}_{-0.14} \pm 0.04$ | ^{1,3} KROKOVNY | 03B | BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² AUBERT,B 04S reports $(0.6 \pm 0.2^{+0.2}_{-0.1}) \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D_{sJ}(2457)^+\bar{D}^0 \times B(D_{sJ}(2457)^+ \rightarrow D_s^+\gamma))/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.036 \pm 0.009$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.³ KROKOVNY 03B reports $(0.56^{+0.16}_{-0.15} \pm 0.17) \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D_{sJ}(2457)^+\bar{D}^0 \times B(D_{sJ}(2457)^+ \rightarrow D_s^+\gamma))/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.036 \pm 0.009$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.NODE=S041Q21;LINKAGE=KR
NODE=S041Q21;LINKAGE=KU

NODE=S041Q21;LINKAGE=KT

 $\Gamma(D_{sJ}(2457)^+\bar{D}^0 \times B(D_{sJ}(2457)^+ \rightarrow D_s^+\pi^+\pi^-))/\Gamma_{\text{total}}$ Γ_{127}/Γ VALUE (units 10^{-3})

CL%

DOCUMENT ID

TECN

COMMENT

NODE=S041Q41
NODE=S041Q41**<0.22** 90 ¹ KROKOVNY 03B BELL $e^+e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q41;LINKAGE=KR

 $\Gamma(D_{sJ}(2457)^+\bar{D}^0 \times B(D_{sJ}(2457)^+ \rightarrow D_s^+\pi^0))/\Gamma_{\text{total}}$ Γ_{128}/Γ VALUE (units 10^{-3})

CL%

DOCUMENT ID

TECN

COMMENT

NODE=S041Q42
NODE=S041Q42**<0.27** 90 ¹ KROKOVNY 03B BELL $e^+e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q42;LINKAGE=KR

 $\Gamma(D_{sJ}(2457)^+\bar{D}^0 \times B(D_{sJ}(2457)^+ \rightarrow D_s^{*+}\gamma))/\Gamma_{\text{total}}$ Γ_{129}/Γ VALUE (units 10^{-3})

CL%

DOCUMENT ID

TECN

COMMENT

NODE=S041Q43
NODE=S041Q43**<0.98** 90 ¹ KROKOVNY 03B BELL $e^+e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q43;LINKAGE=KR

 $\Gamma(D_{sJ}(2457)^+\bar{D}^*(2007)^0)/\Gamma_{\text{total}}$ Γ_{130}/Γ VALUE (units 10^{-3})

DOCUMENT ID

TECN

COMMENT

NODE=S041Q20
NODE=S041Q20**12.0 \pm 3.0 OUR AVERAGE**

| | | | | |
|------------------------|-------------------------|-----|------|-----------------------------------|
| $11.2 \pm 2.6 \pm 2.0$ | ¹ AUBERT | 06N | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| $16^{+8}_{-6} \pm 4$ | ^{2,3} AUBERT,B | 04S | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

- ¹ Uses a missing-mass method in the events that one of the B mesons is fully reconstructed.
- ² AUBERT,B 04S reports $[\Gamma(B^+ \rightarrow D_{sJ}(2457)^+ \bar{D}^*(2007)^0)/\Gamma_{\text{total}}] \times [B(D_{s1}(2460)^+ \rightarrow D_s^{*+} \pi^0)] = (7.6 \pm 1.7^{+3.2}_{-2.4}) \times 10^{-3}$ which we divide by our best value $B(D_{s1}(2460)^+ \rightarrow D_s^{*+} \pi^0) = (48 \pm 11) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.
- ³ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q20;LINKAGE=AN
 NODE=S041Q20;LINKAGE=AU

$$\Gamma(D_{sJ}(2457)^+ \bar{D}^*(2007)^0 \times B(D_{sJ}(2457)^+ \rightarrow D_s^+ \gamma))/\Gamma_{\text{total}} \quad \Gamma_{131}/\Gamma$$

| VALUE (units 10^{-3}) | DOCUMENT ID | TECN | COMMENT |
|--|---------------------------|------|------------------------------------|
| 1.4 ± 0.4^{+0.6}_{-0.4} | ¹ AUBERT,B 04S | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q20;LINKAGE=EP

NODE=S041Q22
 NODE=S041Q22

- ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q22;LINKAGE=AU

$$\Gamma(\bar{D}^0 D_{s1}(2536)^+ \times B(D_{s1}(2536)^+ \rightarrow D^*(2007)^0 K^+))/\Gamma_{\text{total}} \quad \Gamma_{133}/\Gamma$$

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---------------------------|-----|-------------------------|------|------------------------------------|
| 2.16 ± 0.52 ± 0.45 | | ¹ AUBERT 08B | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C41
 NODE=S041C41

- • • We do not use the following data for averages, fits, limits, etc. • • •

<2 90 AUBERT 03X BABR Repl. by AUBERT 08B

- ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C41;LINKAGE=EP

$$\Gamma(\bar{D}^0 D_{s1}(2536)^+ \times B(D_{s1}(2536)^+ \rightarrow D^*(2007)^0 K^+ + D^*(2010)^+ K^0))/\Gamma_{\text{total}} \quad \Gamma_{132}/\Gamma$$

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|---------------------------|--------------------------|------|------------------------------------|
| 3.97 ± 0.85 ± 0.56 | ^{1,2} AUSHEV 11 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C63
 NODE=S041C63

- ¹ Uses $\Gamma(D^*(2007)^0 \rightarrow D^0 \pi^0) / \Gamma(D^*(2007)^0 \rightarrow D^0 \gamma) = 1.74 \pm 0.13$ and $\Gamma(D_{s1}(2536)^+ \rightarrow D^*(2007)^0 K^+) / \Gamma(D_{s1}(2536)^+ \rightarrow D^*(2010)^+ K^0) = 1.36 \pm 0.2$.

NODE=S041C63;LINKAGE=AU

- ² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C63;LINKAGE=EP

$$\Gamma(\bar{D}^*(2007)^0 D_{s1}(2536)^+ \times B(D_{s1}(2536)^+ \rightarrow D^*(2007)^0 K^+))/\Gamma_{\text{total}} \quad \Gamma_{134}/\Gamma$$

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---------------------------|-----|-------------------------|------|------------------------------------|
| 5.46 ± 1.17 ± 1.04 | | ¹ AUBERT 08B | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C42
 NODE=S041C42

- • • We do not use the following data for averages, fits, limits, etc. • • •

<7 90 AUBERT 03X BABR Repl. by AUBERT 08B

- ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C42;LINKAGE=EP

$$\Gamma(\bar{D}^0 D_{s1}(2536)^+ \times B(D_{s1}(2536)^+ \rightarrow D^{*+} K^0))/\Gamma_{\text{total}} \quad \Gamma_{135}/\Gamma$$

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|---------------------------|-------------------------|------|------------------------------------|
| 2.30 ± 0.98 ± 0.43 | ¹ AUBERT 08B | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B01
 NODE=S041B01

- ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B01;LINKAGE=EP

$$\Gamma(\bar{D}^0 D_{sJ}(2700)^+ \times B(D_{sJ}(2700)^+ \rightarrow D^0 K^+))/\Gamma_{\text{total}} \quad \Gamma_{136}/\Gamma$$

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|---|---------------------------|------|------------------------------------|
| 11.3 ± 2.2^{+1.4}_{-2.8} | ¹ BRODZICKA 08 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C03
 NODE=S041C03

- ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C03;LINKAGE=EP

$$\Gamma(\bar{D}^{*0} D_{s1}(2536)^+ \times B(D_{s1}(2536)^+ \rightarrow D^{*+} K^0))/\Gamma_{\text{total}} \quad \Gamma_{137}/\Gamma$$

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|---------------------------|-------------------------|------|------------------------------------|
| 3.92 ± 2.46 ± 0.83 | ¹ AUBERT 08B | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B02
 NODE=S041B02

- ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B02;LINKAGE=EP

$$\Gamma(\bar{D}^{*0} D_{sJ}(2573)^+ \times B(D_{sJ}(2573)^+ \rightarrow D^0 K^+))/\Gamma_{\text{total}} \quad \Gamma_{138}/\Gamma$$

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|------------------------------------|
| <2 | 90 | AUBERT 03X | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C43
 NODE=S041C43

$$\Gamma(\bar{D}^*(2007)^0 D_{sJ}(2573)^+ \times B(D_{sJ}(2573)^+ \rightarrow D^0 K^+))/\Gamma_{\text{total}} \quad \Gamma_{139}/\Gamma$$

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|------------------------------------|
| <5 | 90 | AUBERT 03X | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C44
 NODE=S041C44

$\Gamma(\bar{D}^0 D_s^{*+})/\Gamma_{\text{total}}$ Γ_{140}/Γ

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------------------|-----------------------|----------|------------------------------------|
| 0.0076 ± 0.0016 OUR AVERAGE | | | |
| 0.0079 ± 0.0017 ± 0.0007 | ¹ AUBERT | 06N BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.0068 ± 0.0025 ± 0.0006 | ² GIBAUT | 96 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.010 ± 0.007 ± 0.001 | ³ ALBRECHT | 92G ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041S49
 NODE=S041S49

¹ AUBERT 06N reports $(0.77 \pm 0.15 \pm 0.13) \times 10^{-2}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{D}^0 D_s^{*+})/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.0462 \pm 0.0062$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041S49;LINKAGE=AN

² GIBAUT 96 reports $0.0087 \pm 0.0027 \pm 0.0017$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{D}^0 D_s^{*+})/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.035$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041S49;LINKAGE=Z9

³ ALBRECHT 92G reports $0.016 \pm 0.012 \pm 0.003$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{D}^0 D_s^{*+})/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes PDG 1990 D^0 branching ratios, e.g., $B(D^0 \rightarrow K^- \pi^+) = 3.71 \pm 0.25\%$.

NODE=S041S49;LINKAGE=CA

 $\Gamma(\bar{D}^*(2007)^0 D_s^+)/\Gamma_{\text{total}}$ Γ_{141}/Γ

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------------------|-----------------------|----------|------------------------------------|
| 0.0082 ± 0.0017 OUR AVERAGE | | | |
| 0.0078 ± 0.0018 ± 0.0007 | ¹ AUBERT | 06N BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.011 ± 0.004 ± 0.001 | ² GIBAUT | 96 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.008 ± 0.006 ± 0.001 | ³ ALBRECHT | 92G ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041S50
 NODE=S041S50

¹ AUBERT 06N reports $(0.76 \pm 0.15 \pm 0.13) \times 10^{-2}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{D}^*(2007)^0 D_s^+)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.0462 \pm 0.0062$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041S50;LINKAGE=AN

² GIBAUT 96 reports $0.0140 \pm 0.0043 \pm 0.0035$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{D}^*(2007)^0 D_s^+)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.035$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041S50;LINKAGE=Z9

³ ALBRECHT 92G reports $0.013 \pm 0.009 \pm 0.002$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{D}^*(2007)^0 D_s^+)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes PDG 1990 D^0 and $D^*(2007)^0$ branching ratios, e.g., $B(D^0 \rightarrow K^- \pi^+) = 3.71 \pm 0.25\%$ and $B(D^*(2007)^0 \rightarrow D^0 \pi^0) = 55 \pm 6\%$.

NODE=S041S50;LINKAGE=CA

 $\Gamma(\bar{D}^*(2007)^0 D_s^{*+})/\Gamma_{\text{total}}$ Γ_{142}/Γ

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------------------|-----------------------|----------|------------------------------------|
| 0.0171 ± 0.0024 OUR AVERAGE | | | |
| 0.0167 ± 0.0019 ± 0.0015 | ¹ AUBERT | 06N BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.024 ± 0.009 ± 0.002 | ² GIBAUT | 96 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.019 ± 0.010 ± 0.002 | ³ ALBRECHT | 92G ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041S51
 NODE=S041S51

¹ AUBERT 06N reports $(1.62 \pm 0.22 \pm 0.18) \times 10^{-2}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{D}^*(2007)^0 D_s^{*+})/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.0462 \pm 0.0062$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041S51;LINKAGE=AN

² GIBAUT 96 reports $0.0310 \pm 0.0088 \pm 0.0065$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{D}^*(2007)^0 D_s^{*+})/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.035$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041S51;LINKAGE=Z9

³ ALBRECHT 92G reports $0.031 \pm 0.016 \pm 0.005$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{D}^*(2007)^0 D_s^{*+})/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first

NODE=S041S51;LINKAGE=CA

error is their experiment's error and our second error is the systematic error from using our best value. Assumes PDG 1990 D^0 and $D^*(2007)^0$ branching ratios, e.g., $B(D^0 \rightarrow K^- \pi^+) = 3.71 \pm 0.25\%$ and $B(D^*(2007)^0 \rightarrow D^0 \pi^0) = 55 \pm 6\%$.

$$\Gamma(D_s^{(*)+} \bar{D}^{*0})/\Gamma_{\text{total}}$$
 Γ_{143}/Γ

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|--------------------|------|---|
| $(2.73 \pm 0.93 \pm 0.68) \times 10^{-2}$ | ¹ AHMED | 00B | CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B39
NODE=S041B39

¹ AHMED 00B reports their experiment's uncertainties ($\pm 0.78 \pm 0.48 \pm 0.68\%$), where the first error is statistical, the second is systematic, and the third is the uncertainty in the $D_s \rightarrow \phi \pi$ branching fraction. We combine the first two in quadrature.

NODE=S041B39;LINKAGE=AH

$$\Gamma(\bar{D}^*(2007)^0 D^*(2010)^+)/\Gamma_{\text{total}}$$
 Γ_{144}/Γ

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|-----------------------|------|---|
| $8.1 \pm 1.2 \pm 1.2$ | | ¹ AUBERT,B | 06A | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B34
NODE=S041B34

• • • We do not use the following data for averages, fits, limits, etc. • • •

<110 90 BARATE 98Q ALEP $e^+ e^- \rightarrow Z$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B34;LINKAGE=EP

$$[\Gamma(\bar{D}^0 D^*(2010)^+) + \Gamma(\bar{D}^*(2007)^0 D^+)]/\Gamma_{\text{total}}$$
 Γ_{145}/Γ

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|------------------------------|
| <130 | 90 | BARATE | 98Q | ALEP $e^+ e^- \rightarrow Z$ |

NODE=S041B35
NODE=S041B35

$$\Gamma(\bar{D}^0 D^*(2010)^+)/\Gamma_{\text{total}}$$
 Γ_{146}/Γ

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|---|-----------------------|------|---|
| 3.9 ± 0.5 OUR AVERAGE | | | |
| 3.6 $\pm 0.5 \pm 0.4$ | ¹ AUBERT,B | 06A | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 4.57 $\pm 0.71 \pm 0.56$ | ¹ MAJUMDER | 05 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q74
NODE=S041Q74

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q74;LINKAGE=EP

$$\Gamma(\bar{D}^0 D^+)/\Gamma_{\text{total}}$$
 Γ_{147}/Γ

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|-------------|------|---------|
| 3.8 ± 0.4 OUR AVERAGE | | | | |

3.85 $\pm 0.31 \pm 0.38$

¹ ADACHI 08 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

3.8 $\pm 0.6 \pm 0.5$

¹ AUBERT,B 06A BABR $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

4.83 $\pm 0.78 \pm 0.58$

¹ MAJUMDER 05 BELL Repl. by ADACHI 08

<67 90 BARATE 98Q ALEP $e^+ e^- \rightarrow Z$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B36;LINKAGE=EP

$$\Gamma(\bar{D}^0 D^+ K^0)/\Gamma_{\text{total}}$$
 Γ_{148}/Γ

| VALUE (units 10^{-3}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|------------------------------|------|------------------------------------|
| $1.55 \pm 0.17 \pm 0.13$ | | ¹ DEL-AMO-SA..11B | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C28
NODE=S041C28

• • • We do not use the following data for averages, fits, limits, etc. • • •

<2.8 90 ¹ AUBERT 03X BABR Repl. by DEL-AMO-SANCHEZ 11B

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C28;LINKAGE=EP

$$\Gamma(D^+ \bar{D}^*(2007)^0)/\Gamma_{\text{total}}$$
 Γ_{149}/Γ

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|---|-----------------------|------|---|
| $6.3 \pm 1.4 \pm 1.0$ | ¹ AUBERT,B | 06A | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R49
NODE=S041R49

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R49;LINKAGE=EP

$$\Gamma(\bar{D}^*(2007)^0 D^+ K^0)/\Gamma_{\text{total}}$$
 Γ_{150}/Γ

| VALUE (units 10^{-3}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|------------------------------|------|------------------------------------|
| $2.06 \pm 0.38 \pm 0.30$ | | ¹ DEL-AMO-SA..11B | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C29
NODE=S041C29

• • • We do not use the following data for averages, fits, limits, etc. • • •

<6.1 90 ¹ AUBERT 03X BABR Repl. by DEL-AMO-SANCHEZ 11B

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C29;LINKAGE=EP

$\Gamma(\bar{D}^0 \bar{D}^*(2010)^+ K^0)/\Gamma_{\text{total}}$ Γ_{151}/Γ VALUE (units 10^{-3})

DOCUMENT ID TECN COMMENT

3.81±0.31±0.23¹ DEL-AMO-SA..11B BABR $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

5.2 $\begin{smallmatrix} +1.0 \\ -0.9 \end{smallmatrix} \pm 0.7$ ¹ AUBERT 03X BABR Repl. by DEL-AMO-SANCHEZ 11B¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041C30
NODE=S041C30

NODE=S041C30;LINKAGE=EP

 $\Gamma(\bar{D}^*(2007)^0 D^*(2010)^+ K^0)/\Gamma_{\text{total}}$ Γ_{152}/Γ VALUE (units 10^{-3})

DOCUMENT ID TECN COMMENT

9.17±0.83±0.90¹ DEL-AMO-SA..11B BABR $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

7.8 $\begin{smallmatrix} +2.3 \\ -2.1 \end{smallmatrix} \pm 1.4$ ¹ AUBERT 03X BABR Repl. by DEL-AMO-SANCHEZ 11B¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041C31
NODE=S041C31

NODE=S041C31;LINKAGE=EP

 $\Gamma(\bar{D}^0 D^0 K^+)/\Gamma_{\text{total}}$ Γ_{153}/Γ VALUE (units 10^{-3})

DOCUMENT ID TECN COMMENT

1.45±0.33 OUR AVERAGE Error includes scale factor of 2.6.

1.31±0.07±0.12

¹ DEL-AMO-SA..11B BABR $e^+ e^- \rightarrow \Upsilon(4S)$ 2.22±0.22 $\begin{smallmatrix} +0.26 \\ -0.24 \end{smallmatrix}$ ¹ BRODZICKA 08 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

1.17±0.21±0.15

¹ CHISTOV 04 BELL Repl. by BRODZICKA 08

1.9 ±0.3 ±0.3

¹ AUBERT 03X BABR Repl. by DEL-AMO-SANCHEZ 11B¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041C32
NODE=S041C32

NODE=S041C32;LINKAGE=EP

 $\Gamma(\bar{D}^*(2007)^0 D^0 K^+)/\Gamma_{\text{total}}$ Γ_{154}/Γ VALUE (units 10^{-3})

CL%

DOCUMENT ID TECN COMMENT

2.26±0.16±0.17¹ DEL-AMO-SA..11B BABR $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

<3.8

90

¹ AUBERT 03X BABR Repl. by DEL-AMO-SANCHEZ 11B¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041C33
NODE=S041C33

NODE=S041C33;LINKAGE=EP

 $\Gamma(\bar{D}^0 D^*(2007)^0 K^+)/\Gamma_{\text{total}}$ Γ_{155}/Γ VALUE (units 10^{-3})

DOCUMENT ID TECN COMMENT

6.32±0.19±0.45¹ DEL-AMO-SA..11B BABR $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

4.7 ±0.7 ±0.7

¹ AUBERT 03X BABR Repl. by DEL-AMO-SANCHEZ 11B¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041C34
NODE=S041C34

NODE=S041C34;LINKAGE=EP

 $\Gamma(\bar{D}^*(2007)^0 D^*(2007)^0 K^+)/\Gamma_{\text{total}}$ Γ_{156}/Γ VALUE (units 10^{-3})

DOCUMENT ID TECN COMMENT

11.23±0.36±1.26¹ DEL-AMO-SA..11B BABR $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

5.3 $\begin{smallmatrix} +1.1 \\ -1.0 \end{smallmatrix} \pm 1.2$ ¹ AUBERT 03X BABR Repl. by DEL-AMO-SANCHEZ 11B¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041C35
NODE=S041C35

NODE=S041C35;LINKAGE=EP

 $\Gamma(D^- D^+ K^+)/\Gamma_{\text{total}}$ Γ_{157}/Γ VALUE (units 10^{-3})

CL%

DOCUMENT ID TECN COMMENT

0.22±0.05±0.05¹ DEL-AMO-SA..11B BABR $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

<0.90

90

¹ CHISTOV 04 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

<0.4

90

¹ AUBERT 03X BABR Repl. by DEL-AMO-SANCHEZ 11B¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041C36
NODE=S041C36

NODE=S041C36;LINKAGE=EP

$\Gamma(D^- D^*(2010)^+ K^+)/\Gamma_{\text{total}}$ Γ_{158}/Γ

| VALUE (units 10^{-3}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|-----------------------|--|------------------------------|------|------------------------------------|
| 0.63±0.09±0.06 | | ¹ DEL-AMO-SA..11B | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|--|------------------------------|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|------|----|---------------------|----------|------------------------------|
| <0.7 | 90 | ¹ AUBERT | 03X BABR | Repl. by DEL-AMO-SANCHEZ 11B |
|------|----|---------------------|----------|------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C37
NODE=S041C37

NODE=S041C37;LINKAGE=EP

 $\Gamma(D^*(2010)^- D^+ K^+)/\Gamma_{\text{total}}$ Γ_{159}/Γ

| VALUE (units 10^{-3}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|-----------------------|--|------------------------------|------|------------------------------------|
| 0.60±0.10±0.08 | | ¹ DEL-AMO-SA..11B | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|--|------------------------------|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|---------------|--|---------------------|----------|------------------------------|
| 1.5 ±0.3 ±0.2 | | ¹ AUBERT | 03X BABR | Repl. by DEL-AMO-SANCHEZ 11B |
|---------------|--|---------------------|----------|------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C38
NODE=S041C38

NODE=S041C38;LINKAGE=EP

 $\Gamma(D^*(2010)^- D^*(2010)^+ K^+)/\Gamma_{\text{total}}$ Γ_{160}/Γ

| VALUE (units 10^{-3}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|-----------------------|--|------------------------------|------|------------------------------------|
| 1.32±0.13±0.12 | | ¹ DEL-AMO-SA..11B | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|--|------------------------------|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|------|----|---------------------|----------|------------------------------|
| <1.8 | 90 | ¹ AUBERT | 03X BABR | Repl. by DEL-AMO-SANCHEZ 11B |
|------|----|---------------------|----------|------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C39
NODE=S041C39

NODE=S041C39;LINKAGE=EP

 $\Gamma((\bar{D} + \bar{D}^*)(D + D^*)K)/\Gamma_{\text{total}}$ Γ_{161}/Γ

| VALUE (units 10^{-2}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|-----------------------|--|------------------------------|------|------------------------------------|
| 4.05±0.11±0.28 | | ¹ DEL-AMO-SA..11B | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|--|------------------------------|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|---------------|--|---------------------|----------|------------------------------|
| 3.5 ±0.3 ±0.5 | | ¹ AUBERT | 03X BABR | Repl. by DEL-AMO-SANCHEZ 11B |
|---------------|--|---------------------|----------|------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C40
NODE=S041C40

NODE=S041C40;LINKAGE=EP

 $\Gamma(D_s^+ \pi^0)/\Gamma_{\text{total}}$ Γ_{162}/Γ

| VALUE (units 10^{-5}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|--|--|---------------------|----------|------------------------------------|
| 1.6^{+0.6}_{-0.5}±0.1 | | ¹ AUBERT | 07M BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--|--|---------------------|----------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-----|----|------------------------|----------|------------------------------------|
| <16 | 90 | ² ALEXANDER | 93B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----|----|------------------------|----------|------------------------------------|

¹ AUBERT 07M reports $[\Gamma(B^+ \rightarrow D_s^+ \pi^0)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi \pi^+)] = (7.0^{+2.4+0.6}_{-2.1-0.8}) \times 10^{-7}$ which we divide by our best value $B(D_s^+ \rightarrow \phi \pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

² ALEXANDER 93B reports $< 2.0 \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^+ \pi^0)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi \pi^+)]$ assuming $B(D_s^+ \rightarrow \phi \pi^+) = 0.037$, which we rescale to our best value $B(D_s^+ \rightarrow \phi \pi^+) = 4.5 \times 10^{-2}$.

NODE=S041S83
NODE=S041S83

NODE=S041S83;LINKAGE=AU

NODE=S041S83;LINKAGE=XB

 $[\Gamma(D_s^+ \pi^0) + \Gamma(D_s^{*+} \pi^0)]/\Gamma_{\text{total}}$ $(\Gamma_{162} + \Gamma_{163})/\Gamma$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

| | | | | |
|--------------------------------|----|-----------------------|---------|------------------------------------|
| <5 × 10⁻⁴ | 90 | ¹ ALBRECHT | 93E ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------------------|----|-----------------------|---------|------------------------------------|

¹ ALBRECHT 93E reports $< 0.9 \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^+ \pi^0) + \Gamma(B^+ \rightarrow D_s^{*+} \pi^0)]/\Gamma_{\text{total}} \times [B(D_s^+ \rightarrow \phi \pi^+)]$ assuming $B(D_s^+ \rightarrow \phi \pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi \pi^+) = 4.5 \times 10^{-2}$.

NODE=S041S62
NODE=S041S62

NODE=S041S62;LINKAGE=CA

 $\Gamma(D_s^{*+} \pi^0)/\Gamma_{\text{total}}$ Γ_{163}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

| | | | | |
|----------------------------------|----|------------------------|----------|------------------------------------|
| <2.6 × 10⁻⁴ | 90 | ¹ ALEXANDER | 93B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|----------------------------------|----|------------------------|----------|------------------------------------|

¹ ALEXANDER 93B reports $< 3.2 \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^{*+} \pi^0)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi \pi^+)]$ assuming $B(D_s^+ \rightarrow \phi \pi^+) = 0.037$, which we rescale to our best value $B(D_s^+ \rightarrow \phi \pi^+) = 4.5 \times 10^{-2}$.

NODE=S041S84
NODE=S041S84

NODE=S041S84;LINKAGE=XB

$\Gamma(D_s^+ \eta)/\Gamma_{\text{total}}$ Γ_{164}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---------------------|-----|----------------------------|------|------------------------------------|
| $<4 \times 10^{-4}$ | 90 | ¹ ALEXANDER 93B | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041S85
 NODE=S041S85

¹ ALEXANDER 93B reports $< 4.6 \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^+ \eta)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.037$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$.

NODE=S041S85;LINKAGE=XB

 $\Gamma(D_s^{*+} \eta)/\Gamma_{\text{total}}$ Γ_{165}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---------------------|-----|----------------------------|------|------------------------------------|
| $<6 \times 10^{-4}$ | 90 | ¹ ALEXANDER 93B | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041S86
 NODE=S041S86

¹ ALEXANDER 93B reports $< 7.5 \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^{*+} \eta)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.037$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$.

NODE=S041S86;LINKAGE=XB

 $\Gamma(D_s^+ \rho^0)/\Gamma_{\text{total}}$ Γ_{166}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-----------------------|-----|----------------------------|------|------------------------------------|
| $<3.0 \times 10^{-4}$ | 90 | ¹ ALEXANDER 93B | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041S87
 NODE=S041S87

¹ ALEXANDER 93B reports $< 3.7 \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^+ \rho^0)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.037$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$.

NODE=S041S87;LINKAGE=XB

 $[\Gamma(D_s^+ \rho^0) + \Gamma(D_s^+ \bar{K}^*(892)^0)]/\Gamma_{\text{total}}$ $(\Gamma_{166} + \Gamma_{176})/\Gamma$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-----------------------|-----|---------------------------|------|------------------------------------|
| $<2.0 \times 10^{-3}$ | 90 | ¹ ALBRECHT 93E | ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041S60
 NODE=S041S60

¹ ALBRECHT 93E reports $< 3.4 \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^+ \rho^0) + \Gamma(B^+ \rightarrow D_s^+ \bar{K}^*(892)^0)]/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$.

NODE=S041S60;LINKAGE=CA

 $\Gamma(D_s^{*+} \rho^0)/\Gamma_{\text{total}}$ Γ_{167}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---------------------|-----|----------------------------|------|------------------------------------|
| $<4 \times 10^{-4}$ | 90 | ¹ ALEXANDER 93B | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041S88
 NODE=S041S88

¹ ALEXANDER 93B reports $< 4.8 \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^{*+} \rho^0)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.037$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$.

NODE=S041S88;LINKAGE=XB

 $[\Gamma(D_s^{*+} \rho^0) + \Gamma(D_s^{*+} \bar{K}^*(892)^0)]/\Gamma_{\text{total}}$ $(\Gamma_{167} + \Gamma_{178})/\Gamma$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-----------------------|-----|---------------------------|------|------------------------------------|
| $<1.2 \times 10^{-3}$ | 90 | ¹ ALBRECHT 93E | ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041S61
 NODE=S041S61

¹ ALBRECHT 93E reports $< 2.0 \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^{*+} \rho^0) + \Gamma(B^+ \rightarrow D_s^{*+} \bar{K}^*(892)^0)]/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$.

NODE=S041S61;LINKAGE=CA

 $\Gamma(D_s^+ \omega)/\Gamma_{\text{total}}$ Γ_{168}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---------------------|-----|----------------------------|------|------------------------------------|
| $<4 \times 10^{-4}$ | 90 | ¹ ALEXANDER 93B | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041S63
 NODE=S041S63

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-----------------------|----|---------------------------|-----|------------------------------------|
| $<2.0 \times 10^{-3}$ | 90 | ² ALBRECHT 93E | ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|----|---------------------------|-----|------------------------------------|

¹ ALEXANDER 93B reports $< 4.8 \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^+ \omega)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.037$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$.

NODE=S041S63;LINKAGE=XB

² ALBRECHT 93E reports $< 3.4 \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^+ \omega)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$.

NODE=S041S63;LINKAGE=CA

$\Gamma(D_s^{*+}\omega)/\Gamma_{\text{total}}$ Γ_{169}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|----------------------------|------|-----------------------------------|
| $<6 \times 10^{-4}$ | 90 | ¹ ALEXANDER 93B | CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ••• We do not use the following data for averages, fits, limits, etc. ••• | | | | |
| $<1.1 \times 10^{-3}$ | 90 | ² ALBRECHT 93E | ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ¹ ALEXANDER 93B reports $< 6.8 \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^{*+}\omega)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.037$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$. | | | | |
| ² ALBRECHT 93E reports $< 1.9 \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^{*+}\omega)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$. | | | | |

NODE=S041S64
NODE=S041S64

NODE=S041S64;LINKAGE=XB

NODE=S041S64;LINKAGE=CA

 $\Gamma(D_s^+ a_1(1260)^0)/\Gamma_{\text{total}}$ Γ_{170}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|---------------------------|------|-----------------------------------|
| $<1.8 \times 10^{-3}$ | 90 | ¹ ALBRECHT 93E | ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ¹ ALBRECHT 93E reports $< 3.0 \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^+ a_1(1260)^0)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$. | | | | |

NODE=S041S65
NODE=S041S65

NODE=S041S65;LINKAGE=CA

 $\Gamma(D_s^{*+} a_1(1260)^0)/\Gamma_{\text{total}}$ Γ_{171}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|---------------------------|------|-----------------------------------|
| $<1.3 \times 10^{-3}$ | 90 | ¹ ALBRECHT 93E | ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ¹ ALBRECHT 93E reports $< 2.2 \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^{*+} a_1(1260)^0)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$. | | | | |

NODE=S041S66
NODE=S041S66

NODE=S041S66;LINKAGE=CA

 $\Gamma(D_s^+ \phi)/\Gamma_{\text{total}}$ Γ_{172}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|----------------------------|------|-----------------------------------|
| $1.9^{+1.2}_{-0.7} \pm 0.4$ | | ¹ AAIJ 13R | LHCB | pp at 7 TeV |
| ••• We do not use the following data for averages, fits, limits, etc. ••• | | | | |
| < 1.9 | 90 | ² AUBERT 06F | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| < 1000 | 90 | ³ ALBRECHT 93E | ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |
| < 260 | 90 | ⁴ ALEXANDER 93B | CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ¹ AAIJ 13R reports $(1.87^{+1.25}_{-0.73} \pm 0.19 \pm 0.32) \times 10^{-6}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^+ \phi)/\Gamma_{\text{total}}] / [B(B^+ \rightarrow \bar{D}^0 D_s^+)]$ assuming $B(B^+ \rightarrow \bar{D}^0 D_s^+) = (10.0 \pm 1.7) \times 10^{-3}$. | | | | |
| ² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. | | | | |
| ³ ALBRECHT 93E reports $< 1.7 \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^+ \phi)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$. | | | | |
| ⁴ ALEXANDER 93B reports $< 3.1 \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^+ \phi)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.037$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$. | | | | |

NODE=S041S67
NODE=S041S67

NODE=S041S67;LINKAGE=AA

NODE=S041S67;LINKAGE=EP
NODE=S041S67;LINKAGE=CA

NODE=S041S67;LINKAGE=XB

 $\Gamma(D_s^{*+} \phi)/\Gamma_{\text{total}}$ Γ_{173}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|----------------------------|------|-----------------------------------|
| $<1.2 \times 10^{-5}$ | 90 | ¹ AUBERT 06F | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ••• We do not use the following data for averages, fits, limits, etc. ••• | | | | |
| $<1.3 \times 10^{-3}$ | 90 | ² ALBRECHT 93E | ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |
| $<3.5 \times 10^{-4}$ | 90 | ³ ALEXANDER 93B | CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. | | | | |
| ² ALBRECHT 93E reports $< 2.1 \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^{*+} \phi)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$. | | | | |
| ³ ALEXANDER 93B reports $< 4.2 \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^{*+} \phi)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.037$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$. | | | | |

NODE=S041S68
NODE=S041S68NODE=S041S68;LINKAGE=EP
NODE=S041S68;LINKAGE=CA

NODE=S041S68;LINKAGE=XB

$\Gamma(D_s^+ \bar{K}^0)/\Gamma_{\text{total}}$ Γ_{174}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|----------------------------|------|------------------------------------|
| $<8 \times 10^{-4}$ | 90 | ¹ ALEXANDER 93B | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $<1.5 \times 10^{-3}$ | 90 | ² ALBRECHT 93E | ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| ¹ ALEXANDER 93B reports $< 10.3 \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^+ \bar{K}^0)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.037$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$. | | | | |
| ² ALBRECHT 93E reports $< 2.5 \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^+ \bar{K}^0)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$. | | | | |

NODE=S041S69
NODE=S041S69

NODE=S041S69;LINKAGE=XB

NODE=S041S69;LINKAGE=CA

 $\Gamma(D_s^{*+} \bar{K}^0)/\Gamma_{\text{total}}$ Γ_{175}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|----------------------------|------|------------------------------------|
| $<9 \times 10^{-4}$ | 90 | ¹ ALEXANDER 93B | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $<1.9 \times 10^{-3}$ | 90 | ² ALBRECHT 93E | ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| ¹ ALEXANDER 93B reports $< 10.9 \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^{*+} \bar{K}^0)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.037$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$. | | | | |
| ² ALBRECHT 93E reports $< 3.1 \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^{*+} \bar{K}^0)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$. | | | | |

NODE=S041S70
NODE=S041S70

NODE=S041S70;LINKAGE=XB

NODE=S041S70;LINKAGE=CA

 $\Gamma(D_s^+ \bar{K}^*(892)^0)/\Gamma_{\text{total}}$ Γ_{176}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|---|------|------------------------------------|
| $<4.4 \times 10^{-6}$ (CL = 90%) | | [$<4 \times 10^{-4}$ (CL = 90%) OUR 2012 BEST LIMIT] | | |
| $<4.4 \times 10^{-6}$ | 90 | AAIJ | 13R | LHCB pp at 7 TeV |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $<4 \times 10^{-4}$ | 90 | ¹ ALEXANDER 93B | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| ¹ ALEXANDER 93B reports $< 4.4 \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^+ \bar{K}^*(892)^0)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.037$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$. | | | | |

NODE=S041S89
NODE=S041S89

NODE=S041S89;LINKAGE=XB

 $\Gamma(D_s^+ K^{*0})/\Gamma_{\text{total}}$ Γ_{177}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|--------------------|
| <3.5 | 90 | AAIJ | 13R | LHCB pp at 7 TeV |

NODE=S041C77
NODE=S041C77 $\Gamma(D_s^{*+} \bar{K}^*(892)^0)/\Gamma_{\text{total}}$ Γ_{178}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|----------------------------|------|------------------------------------|
| $<3.5 \times 10^{-4}$ | 90 | ¹ ALEXANDER 93B | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| ¹ ALEXANDER 93B reports $< 4.3 \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^{*+} \bar{K}^*(892)^0)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.037$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$. | | | | |

NODE=S041S90
NODE=S041S90

NODE=S041S90;LINKAGE=XB

 $\Gamma(D_s^- \pi^+ K^+)/\Gamma_{\text{total}}$ Γ_{179}/Γ

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|-----------------------------|------|------------------------------------|
| 1.80 ± 0.22 OUR AVERAGE | | | | |
| $1.71^{+0.08}_{-0.07} \pm 0.25$ | | ¹ WIECHCZYN...09 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $2.02 \pm 0.13 \pm 0.38$ | | ¹ AUBERT 08G | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| <7 | 90 | ² ALBRECHT 93E | ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. | | | | |
| ² ALBRECHT 93E reports $< 1.1 \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow D_s^- \pi^+ K^+)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi\pi^+)]$ assuming $B(D_s^+ \rightarrow \phi\pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi\pi^+) = 4.5 \times 10^{-2}$. | | | | |

NODE=S041S71
NODE=S041S71

NODE=S041S71;LINKAGE=EP

NODE=S041S71;LINKAGE=CA

$\Gamma(D_s^{*-} \pi^+ K^+)/\Gamma_{\text{total}}$ Γ_{180}/Γ

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

1.45 ± 0.24 OUR AVERAGE1.31^{+0.13}_{-0.12} ± 0.28¹ WIECHCZYN...09 BELL e⁺e⁻ → $\Upsilon(4S)$

1.67 ± 0.16 ± 0.35

¹ AUBERT 08G BABR e⁺e⁻ → $\Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

<10

90

² ALBRECHT 93E ARG e⁺e⁻ → $\Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² ALBRECHT 93E reports < 1.6×10^{-3} from a measurement of $[\Gamma(B^+ \rightarrow D_s^{*-} \pi^+ K^+)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi \pi^+)]$ assuming $B(D_s^+ \rightarrow \phi \pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi \pi^+) = 4.5 \times 10^{-2}$.NODE=S041S72
NODE=S041S72

NODE=S041S72;LINKAGE=EP

NODE=S041S72;LINKAGE=CA

 $\Gamma(D_s^- \pi^+ K^*(892)^+)/\Gamma_{\text{total}}$ Γ_{181}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

<5 × 10⁻³

90

¹ ALBRECHT 93E ARG e⁺e⁻ → $\Upsilon(4S)$ ¹ ALBRECHT 93E reports < 8.6×10^{-3} from a measurement of $[\Gamma(B^+ \rightarrow D_s^- \pi^+ K^*(892)^+)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi \pi^+)]$ assuming $B(D_s^+ \rightarrow \phi \pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi \pi^+) = 4.5 \times 10^{-2}$.NODE=S041S73
NODE=S041S73

NODE=S041S73;LINKAGE=CA

 $\Gamma(D_s^{*-} \pi^+ K^*(892)^+)/\Gamma_{\text{total}}$ Γ_{182}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

<7 × 10⁻³

90

¹ ALBRECHT 93E ARG e⁺e⁻ → $\Upsilon(4S)$ ¹ ALBRECHT 93E reports < 1.1×10^{-2} from a measurement of $[\Gamma(B^+ \rightarrow D_s^{*-} \pi^+ K^*(892)^+)/\Gamma_{\text{total}}] \times [B(D_s^+ \rightarrow \phi \pi^+)]$ assuming $B(D_s^+ \rightarrow \phi \pi^+) = 0.027$, which we rescale to our best value $B(D_s^+ \rightarrow \phi \pi^+) = 4.5 \times 10^{-2}$.NODE=S041S74
NODE=S041S74

NODE=S041S74;LINKAGE=CA

 $\Gamma(D_s^- K^+ K^+)/\Gamma_{\text{total}}$ Γ_{183}/Γ

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

0.11 ± 0.04 ± 0.02¹ AUBERT 08G BABR e⁺e⁻ → $\Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041C10
NODE=S041C10

NODE=S041C10;LINKAGE=EP

 $\Gamma(D_s^{*-} K^+ K^+)/\Gamma_{\text{total}}$ Γ_{184}/Γ

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

<0.15

90

¹ AUBERT 08G BABR e⁺e⁻ → $\Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041C12
NODE=S041C12

NODE=S041C12;LINKAGE=EP

 $\Gamma(\eta_c K^+)/\Gamma_{\text{total}}$ Γ_{185}/Γ

| VALUE (units 10^{-3}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

0.96 ± 0.11 OUR AVERAGE[(0.96 ± 0.12) × 10⁻³ OUR 2012 AVERAGE]

0.87 ± 0.15

^{1,2} AUBERT 06E BABR e⁺e⁻ → $\Upsilon(4S)$ 1.19^{+0.24+0.13}_{-0.19-0.12}³ AUBERT,B 05L BABR e⁺e⁻ → $\Upsilon(4S)$ 1.25 ± 0.14^{+0.39}_{-0.40}⁴ FANG 03 BELL e⁺e⁻ → $\Upsilon(4S)$ 0.69^{+0.26}_{-0.21} ± 0.22⁵ EDWARDS 01 CLE2 e⁺e⁻ → $\Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

1.01 ± 0.12 ± 0.07

^{2,6} AUBERT,B 04B BABR e⁺e⁻ → $\Upsilon(4S)$ ¹ Perform measurements of absolute branching fractions using a missing mass technique.² The ratio of $B(B^\pm \rightarrow K^\pm \eta_c) B(\eta_c \rightarrow K \bar{K} \pi) = (7.4 \pm 0.5 \pm 0.7) \times 10^{-5}$ reported in AUBERT,B 04B and $B(B^\pm \rightarrow K^\pm \eta_c) = (8.7 \pm 1.5) \times 10^{-3}$ reported in AUBERT 06E contribute to the determination of $B(\eta_c \rightarrow K \bar{K} \pi)$, which is used by others for normalization.³ AUBERT,B 05L reports $[\Gamma(B^+ \rightarrow \eta_c K^+)/\Gamma_{\text{total}}] \times [B(\eta_c(1S) \rightarrow p \bar{p})] = (1.8^{+0.3}_{-0.2} \pm 0.2) \times 10^{-6}$ which we divide by our best value $B(\eta_c(1S) \rightarrow p \bar{p}) = (1.51 \pm 0.16) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.⁴ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.⁵ EDWARDS 01 assumes equal production of B^0 and B^+ at the $\Upsilon(4S)$. The correlated uncertainties (28.3)% from $B(J/\psi(1S) \rightarrow \gamma \eta_c)$ in those modes have been accounted for.NODE=S041B40
NODE=S041B40

NEW

NODE=S041B40;LINKAGE=AT

NODE=S041B40;LINKAGE=AV

NODE=S041B40;LINKAGE=AE

NODE=S041B40;LINKAGE=EP

NODE=S041B40;LINKAGE=A

⁶ AUBERT, B 04B reports $[\Gamma(B^+ \rightarrow \eta_c K^+)/\Gamma_{\text{total}}] \times [B(\eta_c(1S) \rightarrow K \bar{K} \pi)] = (0.074 \pm 0.005 \pm 0.007) \times 10^{-3}$ which we divide by our best value $B(\eta_c(1S) \rightarrow K \bar{K} \pi) = (7.3 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041B40;LINKAGE=AU

$$\Gamma(B^+ \rightarrow \eta_c K^+)/\Gamma_{\text{total}} \times \Gamma(\eta_c(1S) \rightarrow \gamma\gamma)/\Gamma_{\text{total}}$$

$$\Gamma_{185}/\Gamma \times \Gamma_{34}^{\eta_c(1S)}/\Gamma_{\eta_c(1S)}$$

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|----------------------------------|--------------------|------|---|
| $0.22^{+0.09+0.04}_{-0.07-0.02}$ | ¹ WICHT | 08 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B08
NODE=S041B08

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B08;LINKAGE=EP

$$\Gamma(\eta_c K^+, \eta_c \rightarrow K_S^0 K^\mp \pi^\pm)/\Gamma_{\text{total}}$$

$$\Gamma_{186}/\Gamma$$

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|------------------------------|---------------------------|------|---|
| $26.7 \pm 1.4^{+5.7}_{-5.5}$ | ^{1,2} VINOKUROVA | 11 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C64
NODE=S041C64

¹ Assumes equal production of B^0 and B^+ from Upsilon(4S) decays.

NODE=S041C64;LINKAGE=EP

² VINOKUROVA 11 reports $(26.7 \pm 1.4^{+2.9}_{-2.6} \pm 4.9) \times 10^{-6}$, where the first uncertainty is statistical, the second is due to systematics, and the third comes from interference of $\eta_c(1S) \rightarrow K_S^0 K^\pm \pi^\mp$ with nonresonant $K_S^0 K^\pm \pi^\mp$. We combined both systematic uncertainties to single values.

NODE=S041C64;LINKAGE=VI

$$\Gamma(\eta_c K^*(892)^+)/\Gamma_{\text{total}}$$

$$\Gamma_{187}/\Gamma$$

| VALUE (units 10^{-3}) | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|---|------|---------|
| $1.0^{+0.5}_{-0.4}$ OUR AVERAGE | [[$(1.1^{+0.5}_{-0.4}) \times 10^{-3}$ OUR 2012 AVERAGE] | | |

NODE=S041Q96
NODE=S041Q96

NEW

| | | | |
|-----------------------------|-----------------------|------|---|
| $1.0^{+0.5}_{-0.4} \pm 0.1$ | ^{1,2} AUBERT | 07AV | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------------|-----------------------|------|---|

¹ AUBERT 07AV reports $[\Gamma(B^+ \rightarrow \eta_c K^*(892)^+)/\Gamma_{\text{total}}] \times [B(\eta_c(1S) \rightarrow p \bar{p})] = (1.57^{+0.56+0.45}_{-0.46-0.36}) \times 10^{-6}$ which we divide by our best value $B(\eta_c(1S) \rightarrow p \bar{p}) = (1.51 \pm 0.16) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041Q96;LINKAGE=AU

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q96;LINKAGE=EP

$$\Gamma(\eta_c(2S) K^+)/\Gamma_{\text{total}}$$

$$\Gamma_{188}/\Gamma$$

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|---------------------|------|---|
| $3.4 \pm 1.8 \pm 0.3$ | ¹ AUBERT | 06E | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q77
NODE=S041Q77

¹ Perform measurements of absolute branching fractions using a missing mass technique.

NODE=S041Q77;LINKAGE=AT

$$\Gamma(B^+ \rightarrow h_c(1P) K^+)/\Gamma_{\text{total}} \times \Gamma(h_c(1P) \rightarrow \eta_c(1S) \gamma)/\Gamma_{\text{total}}$$

$$\Gamma_{248}/\Gamma \times \Gamma_{4}^{h_c(1P)}/\Gamma_{h_c(1P)}$$

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|------|---|
| < 0.48 | 90 | ¹ AUBERT | 08AB | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C16
NODE=S041C16

¹ Uses the production ratio of $(B^+ B^-)/(B^0 \bar{B}^0) = 1.026 \pm 0.032$ at $\Upsilon(4S)$.

NODE=S041C16;LINKAGE=PR

$$\Gamma(B^+ \rightarrow \eta_c(2S) K^+)/\Gamma_{\text{total}} \times \Gamma(\eta_c(2S) \rightarrow \gamma\gamma)/\Gamma_{\text{total}}$$

$$\Gamma_{188}/\Gamma \times \Gamma_{14}^{\eta_c(2S)}/\Gamma_{\eta_c(2S)}$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|--------------------|------|---|
| < 0.18 | 90 | ¹ WICHT | 08 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B09
NODE=S041B09

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B09;LINKAGE=EP

$$\Gamma(\eta_c(2S) K^+, \eta_c(2S) \rightarrow K_S^0 K^\mp \pi^\pm)/\Gamma_{\text{total}}$$

$$\Gamma_{189}/\Gamma$$

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|-----------------------------|---------------------------|------|---|
| $3.4^{+2.2+0.5}_{-1.5-0.4}$ | ^{1,2} VINOKUROVA | 11 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C65
NODE=S041C65

¹ Assumes equal production of B^0 and B^+ from Upsilon(4S) decays.

NODE=S041C65;LINKAGE=EP

² The first uncertainty includes both statistical and interference effects while the second is due to systematics.

NODE=S041C65;LINKAGE=VI

$\Gamma(J/\psi(1S)K^+)/\Gamma_{\text{total}}$ Γ_{208}/Γ VALUE (units 10^{-4}) EVTS

DOCUMENT ID TECN COMMENT

10.28 ± 0.31 OUR FIT[(10.16 ± 0.33) × 10⁻⁴ OUR 2012 FIT]**10.24 ± 0.35 OUR AVERAGE**[(10.22 ± 0.35) × 10⁻⁴ OUR 2012 AVERAGE]

| | | | | | |
|---------------------|---|---------------------------|------|-----------------------------------|-----------------------------------|
| 8.1 ± 1.3 ± 0.7 | | ¹ AUBERT | 06E | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 10.61 ± 0.15 ± 0.48 | | ² AUBERT | 05J | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 10.4 ± 1.1 ± 0.1 | | ³ AUBERT,B | 05L | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 10.1 ± 0.2 ± 0.7 | | ² ABE | 03B | BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 10.2 ± 0.8 ± 0.7 | | ² JESSOP | 97 | CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 9.3 ± 3.1 ± 0.1 | | ⁴ BORTOLETTO92 | CLEO | $e^+e^- \rightarrow \Upsilon(4S)$ | |
| 8.1 ± 3.5 ± 0.1 | 6 | ⁵ ALBRECHT | 90J | ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | | |
|------------------|----|-----------------------|-----|------|-----------------------------------|
| 10.1 ± 0.3 ± 0.5 | | ² AUBERT | 02 | BABR | Repl. by AUBERT 05J |
| 11.0 ± 1.5 ± 0.9 | 59 | ² ALAM | 94 | CLE2 | Repl. by JESSOP 97 |
| 22 ± 10 ± 2 | | BUSKULIC | 92G | ALEP | $e^+e^- \rightarrow Z$ |
| 7 ± 4 | 3 | ⁶ ALBRECHT | 87D | ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 10 ± 7 ± 2 | 3 | ⁷ BEBEK | 87 | CLEO | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 9 ± 5 | 3 | ⁸ ALAM | 86 | CLEO | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Perform measurements of absolute branching fractions using a missing mass technique.² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.³ AUBERT,B 05L reports $[\Gamma(B^+ \rightarrow J/\psi(1S)K^+)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \rightarrow p\bar{p})] = (2.2 \pm 0.2 \pm 0.1) \times 10^{-6}$ which we divide by our best value $B(J/\psi(1S) \rightarrow p\bar{p}) = (2.120 \pm 0.029) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.⁴ BORTOLETTO 92 reports $(8 \pm 2 \pm 2) \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow J/\psi(1S)K^+)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \rightarrow e^+e^-)]$ assuming $B(J/\psi(1S) \rightarrow e^+e^-) = 0.069 \pm 0.009$, which we rescale to our best value $B(J/\psi(1S) \rightarrow e^+e^-) = (5.94 \pm 0.06) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.⁵ ALBRECHT 90J reports $(7 \pm 3 \pm 1) \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow J/\psi(1S)K^+)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \rightarrow e^+e^-)]$ assuming $B(J/\psi(1S) \rightarrow e^+e^-) = 0.069 \pm 0.009$, which we rescale to our best value $B(J/\psi(1S) \rightarrow e^+e^-) = (5.94 \pm 0.06) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.⁶ ALBRECHT 87D assume $B^+B^-/B^0\bar{B}^0$ ratio is 55/45. Superseded by ALBRECHT 90J.⁷ BEBEK 87 value has been updated in BERKELMAN 91 to use same assumptions as noted for BORTOLETTO 92.⁸ ALAM 86 assumes B^\pm/B^0 ratio is 60/40.NODE=S041R3
NODE=S041R3

NEW

NEW

NODE=S041R3;LINKAGE=AT
NODE=S041R3;LINKAGE=EP
NODE=S041R3;LINKAGE=AE

NODE=S041R3;LINKAGE=AB

NODE=S041R3;LINKAGE=BA

NODE=S041R3;LINKAGE=C
NODE=S041R3;LINKAGE=A

NODE=S041R3;LINKAGE=B

 $\Gamma(\eta_c K^+)/\Gamma(J/\psi(1S)K^+)$ $\Gamma_{185}/\Gamma_{208}$

VALUE

DOCUMENT ID TECN COMMENT

1.33 ± 0.10 ± 0.43¹ AUBERT,B 04B BABR $e^+e^- \rightarrow \Upsilon(4S)$ ¹ Uses BABAR measurement of $B(B^+ \rightarrow J/\psi K^+) = (10.1 \pm 0.3 \pm 0.5) \times 10^{-4}$.NODE=S041Q06
NODE=S041Q06

NODE=S041Q06;LINKAGE=AU

 $\Gamma(B^+ \rightarrow J/\psi(1S)K^+)/\Gamma_{\text{total}} \times \Gamma(J/\psi(1S) \rightarrow \gamma\gamma)/\Gamma_{\text{total}}$ $\Gamma_{208}/\Gamma \times \Gamma_{195}^{J/\psi(1S)}/\Gamma_{J/\psi(1S)}$ VALUE (units 10^{-6})

CL%

DOCUMENT ID TECN COMMENT

<0.16

90

¹ WICHT 08 BELL $e^+e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041C14
NODE=S041C14

NODE=S041C14;LINKAGE=EP

 $\Gamma(J/\psi(1S)K^+\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{210}/Γ VALUE (units 10^{-3})

CL% EVTS

DOCUMENT ID TECN COMMENT

0.81 ± 0.13 OUR AVERAGE Error includes scale factor of 2.5. See the ideogram below.

| | | | | | |
|-----------------------|---|---------------------------|------|-----------------------------------|-----------------------------------|
| 0.716 ± 0.010 ± 0.060 | | ¹ GULER | 11 | BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 1.16 ± 0.07 ± 0.09 | | ¹ AUBERT | 05R | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 0.69 ± 0.18 ± 0.12 | | ² ACOSTA | 02F | CDF | $p\bar{p}$ 1.8 TeV |
| 1.39 ± 0.82 ± 0.01 | | ³ BORTOLETTO92 | CLEO | $e^+e^- \rightarrow \Upsilon(4S)$ | |
| 1.39 ± 0.91 ± 0.01 | 6 | ⁴ ALBRECHT | 87D | ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |

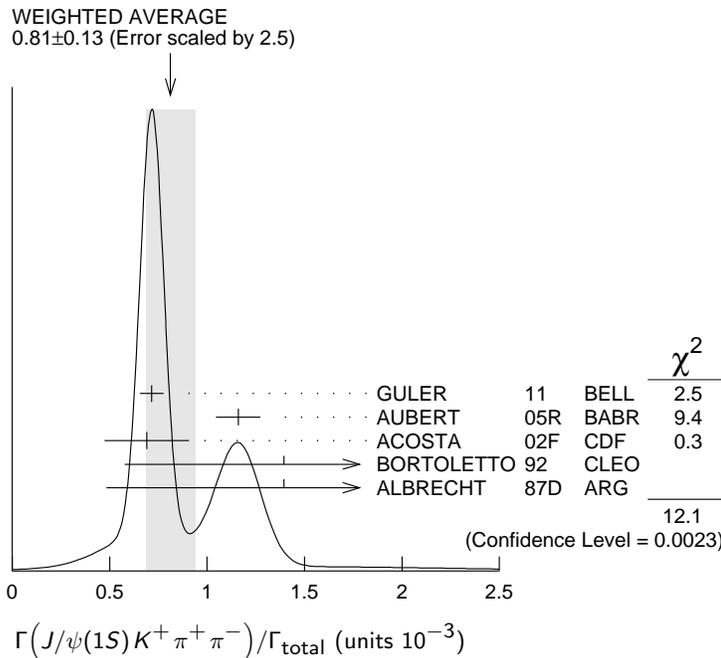
• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | | |
|------|----|-----------------------|-----|-----|-----------------------------------|
| <1.9 | 90 | ⁵ ALBRECHT | 90J | ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |
|------|----|-----------------------|-----|-----|-----------------------------------|

NODE=S041R19
NODE=S041R19

- ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.
- ² ACOSTA 02F uses as reference of $B(B \rightarrow J/\psi(1S)K^+) = (10.1 \pm 0.6) \times 10^{-4}$. The second error includes the systematic error and the uncertainties of the branching ratio.
- ³ BORTOLETTO 92 reports $(1.2 \pm 0.6 \pm 0.4) \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow J/\psi(1S)K^+\pi^+\pi^-)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \rightarrow e^+e^-)]$ assuming $B(J/\psi(1S) \rightarrow e^+e^-) = 0.069 \pm 0.009$, which we rescale to our best value $B(J/\psi(1S) \rightarrow e^+e^-) = (5.94 \pm 0.06) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.
- ⁴ ALBRECHT 87D reports $(1.2 \pm 0.8) \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow J/\psi(1S)K^+\pi^+\pi^-)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \rightarrow e^+e^-)]$ assuming $B(J/\psi(1S) \rightarrow e^+e^-) = 0.069 \pm 0.009$, which we rescale to our best value $B(J/\psi(1S) \rightarrow e^+e^-) = (5.94 \pm 0.06) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. They actually report 0.0011 ± 0.0007 assuming $B^+B^-/B^0\bar{B}^0$ ratio is 55/45. We rescale to 50/50. Analysis explicitly removes $B^+ \rightarrow \psi(2S)K^+$.
- ⁵ ALBRECHT 90J reports $< 1.6 \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow J/\psi(1S)K^+\pi^+\pi^-)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \rightarrow e^+e^-)]$ assuming $B(J/\psi(1S) \rightarrow e^+e^-) = 0.069$, which we rescale to our best value $B(J/\psi(1S) \rightarrow e^+e^-) = 5.94 \times 10^{-2}$. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R19;LINKAGE=EP
 NODE=S041R19;LINKAGE=CA
 NODE=S041R19;LINKAGE=B9
 NODE=S041R19;LINKAGE=C
 NODE=S041R19;LINKAGE=9B



| $\Gamma(h_c(1P)K^+ \times B(h_c(1P) \rightarrow J/\psi\pi^+\pi^-))/\Gamma_{\text{total}}$ | | | | | Γ_{190}/Γ |
|---|-----|---------------------|----------|-----------------------------------|-----------------------|
| VALUE | CL% | DOCUMENT ID | TECN | COMMENT | |
| $< 3.4 \times 10^{-6}$ | 90 | ¹ AUBERT | 05R BABR | $e^+e^- \rightarrow \Upsilon(4S)$ | |

NODE=S041Q69
 NODE=S041Q69

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q69;LINKAGE=EP

| $\Gamma(X(3872)K^+)/\Gamma_{\text{total}}$ | | | | | Γ_{191}/Γ |
|--|-----|---------------------|----------|-----------------------------------|-----------------------|
| VALUE | CL% | DOCUMENT ID | TECN | COMMENT | |
| $< 3.2 \times 10^{-4}$ | 90 | ¹ AUBERT | 06E BABR | $e^+e^- \rightarrow \Upsilon(4S)$ | |

NODE=S041Q78
 NODE=S041Q78

¹ Perform measurements of absolute branching fractions using a missing mass technique.

NODE=S041Q78;LINKAGE=AT

| $\Gamma(B^+ \rightarrow X(3872)K^+)/\Gamma_{\text{total}} \times \Gamma(X(3872) \rightarrow \gamma\gamma)/\Gamma_{\text{total}}$ | | | | | $\Gamma_{191}/\Gamma \times \Gamma_7^{X(3872)}/\Gamma X(3872)$ |
|--|-----|--------------------|---------|-----------------------------------|--|
| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT | |
| < 0.24 | 90 | ¹ WICHT | 08 BELL | $e^+e^- \rightarrow \Upsilon(4S)$ | |

NODE=S041C15
 NODE=S041C15

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C15;LINKAGE=EP

$$\Gamma(X(3872)K^+ \times B(X \rightarrow J/\psi\pi^+\pi^-))/\Gamma_{\text{total}} \quad \Gamma_{192}/\Gamma$$

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|---|---------------------|------|--|
| 8.6 ± 0.8 OUR AVERAGE | | | |
| 8.63 ± 0.82 ± 0.52 | ¹ CHOI | 11 | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |
| 8.4 ± 1.5 ± 0.7 | ¹ AUBERT | 08Y | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| 10.1 ± 2.5 ± 1.0 | ¹ AUBERT | 06 | BABR Repl. by AUBERT 08Y |
| 12.8 ± 4.1 | ¹ AUBERT | 05R | BABR Repl. by AUBERT 06 |
| 12.5 ± 2.8 ± 0.5 | ² CHOI | 03 | BELL Repl. by CHOI 11 |

NODE=S041C3
NODE=S041C3

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² CHOI 03 reports $[\Gamma(B^+ \rightarrow X(3872)K^+ \times B(X \rightarrow J/\psi\pi^+\pi^-))/\Gamma_{\text{total}}] / [B(B^+ \rightarrow \psi(2S)K^+)] = 0.0200 \pm 0.0038 \pm 0.0023$ which we multiply by our best value $B(B^+ \rightarrow \psi(2S)K^+) = (6.27 \pm 0.24) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041C3;LINKAGE=EP
NODE=S041C3;LINKAGE=CH

$$\Gamma(X(3872)K^+ \times B(X \rightarrow J/\psi\gamma))/\Gamma_{\text{total}} \quad \Gamma_{193}/\Gamma$$

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|---|-------------------------|------|--|
| 2.1 ± 0.4 OUR AVERAGE | | | Error includes scale factor of 1.1. |
| 1.78 ^{+0.48} _{-0.44} ± 0.12 | ¹ BHARDWAJ | 11 | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |
| 2.8 ± 0.8 ± 0.1 | ² AUBERT | 09B | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| 3.3 ± 1.0 ± 0.3 | ¹ AUBERT, BE | 06M | BABR Repl. by AUBERT 09B |

NODE=S041R13
NODE=S041R13

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Uses $B(\Upsilon(4S) \rightarrow B^+B^-) = (51.6 \pm 0.6)\%$ and $B(\Upsilon(4S) \rightarrow B^0\bar{B}^0) = (48.4 \pm 0.6)\%$.

NODE=S041R13;LINKAGE=EP
NODE=S041R13;LINKAGE=AU

$$\Gamma(X(3872)K^*(892)^+ \times B(X \rightarrow J/\psi\gamma))/\Gamma_{\text{total}} \quad \Gamma_{194}/\Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|---------------------|------|--|
| < 4.8 | 90 | ¹ AUBERT | 09B | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |
| ¹ Uses $B(\Upsilon(4S) \rightarrow B^+B^-) = (51.6 \pm 0.6)\%$ and $B(\Upsilon(4S) \rightarrow B^0\bar{B}^0) = (48.4 \pm 0.6)\%$. | | | | |

NODE=S041C58
NODE=S041C58

NODE=S041C58;LINKAGE=AU

$$\Gamma(X(3872)K^+ \times B(X \rightarrow \psi(2S)\gamma))/\Gamma_{\text{total}} \quad \Gamma_{195}/\Gamma$$

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|---|-------------------------|------|--|
| 4 ± 4 OUR AVERAGE | | | Error includes scale factor of 2.5. |
| 0.83 ^{+1.98} _{-1.83} ± 0.44 | ^{1,2} BHARDWAJ | 11 | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |
| 9.5 ± 2.7 ± 0.6 | ³ AUBERT | 09B | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C59
NODE=S041C59

¹ BHARDWAJ 11 measurement is equivalent to a limit of $< 3.45 \times 10^{-6}$ at 90% CL.

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

³ Uses $B(\Upsilon(4S) \rightarrow B^+B^-) = (51.6 \pm 0.6)\%$ and $B(\Upsilon(4S) \rightarrow B^0\bar{B}^0) = (48.4 \pm 0.6)\%$.

NODE=S041C59;LINKAGE=BH
NODE=S041C59;LINKAGE=EP
NODE=S041C59;LINKAGE=AU

$$\Gamma(X(3872)K^*(892)^+ \times B(X \rightarrow \psi(2S)\gamma))/\Gamma_{\text{total}} \quad \Gamma_{196}/\Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|---------------------|------|--|
| < 28 | 90 | ¹ AUBERT | 09B | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |
| ¹ Uses $B(\Upsilon(4S) \rightarrow B^+B^-) = (51.6 \pm 0.6)\%$ and $B(\Upsilon(4S) \rightarrow B^0\bar{B}^0) = (48.4 \pm 0.6)\%$. | | | | |

NODE=S041C60
NODE=S041C60

NODE=S041C60;LINKAGE=AU

$$\Gamma(X(3872)K^+ \times B(X \rightarrow D^0\bar{D}^0))/\Gamma_{\text{total}} \quad \Gamma_{197}/\Gamma$$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|----------------------|------|--|
| < 6.0 × 10⁻⁵ | 90 | ¹ CHISTOV | 04 | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |
| ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. | | | | |

NODE=S041Q16
NODE=S041Q16

NODE=S041Q16;LINKAGE=CH

$$\Gamma(X(3872)K^+ \times B(X \rightarrow D^+D^-))/\Gamma_{\text{total}} \quad \Gamma_{198}/\Gamma$$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|----------------------|------|--|
| < 4.0 × 10⁻⁵ | 90 | ¹ CHISTOV | 04 | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |
| ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. | | | | |

NODE=S041Q17
NODE=S041Q17

NODE=S041Q17;LINKAGE=CH

$$\Gamma(X(3872)K^+ \times B(X \rightarrow D^0\bar{D}^0\pi^0))/\Gamma_{\text{total}} \quad \Gamma_{199}/\Gamma$$

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|----------------------|------|--|
| 1.02 ± 0.31^{+0.21}_{-0.29} | | ¹ GOKHROO | 06 | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q18
NODE=S041Q18

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-------|----|----------------------|----|--------------------------|
| < 0.6 | 90 | ² CHISTOV | 04 | BELL Repl. by GOKHROO 06 |
|-------|----|----------------------|----|--------------------------|

¹ Measure the near-threshold enhancements in the $(D^0\bar{D}^0\pi^0)$ system at a mass $3875.2 \pm 0.7^{+0.3}_{-1.6} \pm 0.8$ MeV/c².

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q18;LINKAGE=GO

NODE=S041Q18;LINKAGE=CH

$$\Gamma(X(3872)K^+ \times B(X \rightarrow \bar{D}^{*0} D^0))/\Gamma_{\text{total}} \quad \Gamma_{200}/\Gamma$$

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-----|---------------------|----------|-------------------------------------|
| 0.85±0.26 OUR AVERAGE | | | | Error includes scale factor of 1.4. |
| 0.77±0.16±0.10 | | ¹ AUSHEV | 10 BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 1.67±0.36±0.47 | | ¹ AUBERT | 08B BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B03
NODE=S041B03

NODE=S041B03;LINKAGE=EP

$$\Gamma(X(3872)K^+ \times B(X(3872) \rightarrow J/\psi(1S)\eta))/\Gamma_{\text{total}} \quad \Gamma_{201}/\Gamma$$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|----------------------------------|-----|---------------------|----------|-----------------------------------|
| <7.7 × 10⁻⁶ | 90 | ¹ AUBERT | 04Y BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q09
NODE=S041Q09

NODE=S041Q09;LINKAGE=AU

$$\Gamma(X(3872)^+ K^0 \times B(X(3872)^+ \rightarrow J/\psi(1S)\pi^+\pi^0))/\Gamma_{\text{total}} \quad \Gamma_{202}/\Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|---------|-----------------------------------|
| < 6.1 | 90 | ^{1,2} CHOI | 11 BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

<22 90 ³ AUBERT 05B BABR $e^+e^- \rightarrow \Upsilon(4S)$

¹ Assumes $\pi^+\pi^0$ originates from ρ^+ .

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

³ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. The isovector- X hypothesis is excluded with a likelihood test at 1×10^{-4} level.

NODE=S041Q52
NODE=S041Q52

NODE=S041Q52;LINKAGE=CH
NODE=S041Q52;LINKAGE=EP
NODE=S041Q52;LINKAGE=AU

$$\Gamma(X(4430)^+ K^0 \times B(X^+ \rightarrow J/\psi\pi^+))/\Gamma_{\text{total}} \quad \Gamma_{203}/\Gamma$$

| VALUE (units 10^{-5}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|-----------|-----------------------------------|
| <1.5 | 95 | ¹ AUBERT | 09AA BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C54
NODE=S041C54

NODE=S041C54;LINKAGE=EP

$$\Gamma(X(4430)^+ K^0 \times B(X^+ \rightarrow \psi(2S)\pi^+))/\Gamma_{\text{total}} \quad \Gamma_{204}/\Gamma$$

| VALUE (units 10^{-5}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|-----------|-----------------------------------|
| <4.7 | 95 | ¹ AUBERT | 09AA BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C55
NODE=S041C55

NODE=S041C55;LINKAGE=EP

$$\Gamma(X(4260)^0 K^+ \times B(X^0 \rightarrow J/\psi\pi^+\pi^-))/\Gamma_{\text{total}} \quad \Gamma_{205}/\Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|---------|-----------------------------------|
| <29 | 95 | ¹ AUBERT | 06 BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q57
NODE=S041Q57

NODE=S041Q57;LINKAGE=EP

$$\Gamma(X(3915)^0 K^+ \times B(X^0 \rightarrow J/\psi\gamma))/\Gamma_{\text{total}} \quad \Gamma_{206}/\Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|------------------------|----------|-----------------------------------|
| <14 | 90 | ¹ AUBERT,BE | 06M BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R00
NODE=S041R00

NODE=S041R00;LINKAGE=EP

$$\Gamma(Z(3930)^0 K^+ \times B(Z^0 \rightarrow J/\psi\gamma))/\Gamma_{\text{total}} \quad \Gamma_{207}/\Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|------------------------|----------|-----------------------------------|
| <2.5 | 90 | ¹ AUBERT,BE | 06M BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R01
NODE=S041R01

NODE=S041R01;LINKAGE=EP

$$\Gamma(J/\psi(1S)K^0\pi^+)/\Gamma_{\text{total}} \quad \Gamma_{209}/\Gamma$$

| VALUE (units 10^{-3}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|---------------------|-----------|-----------------------------------|
| 1.101±0.021 | ¹ AUBERT | 09AA BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

¹ Does not report systematic uncertainties.

NODE=S041C74
NODE=S041C74

NODE=S041C74;LINKAGE=AU

$\Gamma(J/\psi(1S)K^*(892)^+)/\Gamma_{\text{total}}$ Γ_{211}/Γ

For polarization information see the Listings at the end of the “ B^0 Branching Ratios” section.

| VALUE (units 10^{-3}) | EVTS | DOCUMENT ID | TECN | COMMENT |
|--------------------------|------|-------------|------|---------|
|--------------------------|------|-------------|------|---------|

1.44 ± 0.08 OUR FIT[(1.43 ± 0.08) × 10⁻³ OUR 2012 FIT]**1.43 ± 0.08 OUR AVERAGE**

| | | | | |
|---|---|----------------|-----------|-----------------------------------|
| 1.78 ^{+0.36} _{-0.32} ± 0.02 | | 1,2 AUBERT | 07AV BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 1.454 ± 0.047 ± 0.097 | | 2 AUBERT | 05J BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 1.28 ± 0.07 ± 0.14 | | 2 ABE | 02N BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 1.41 ± 0.23 ± 0.24 | | 2 JESSOP | 97 CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 1.58 ± 0.47 ± 0.27 | | 3 ABE | 96H CDF | $p\bar{p}$ at 1.8 TeV |
| 1.51 ± 1.08 ± 0.02 | | 4 BORTOLETTO92 | CLEO | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 1.86 ± 1.30 ± 0.02 | 2 | 5 ALBRECHT | 90J ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |

● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●

| | | | | |
|--------------------|----|----------|---------|---------------------|
| 1.37 ± 0.09 ± 0.11 | | 2 AUBERT | 02 BABR | Repl. by AUBERT 05J |
| 1.78 ± 0.51 ± 0.23 | 13 | 2 ALAM | 94 CLE2 | Sup. by JESSOP 97 |

¹ AUBERT 07AV reports $[\Gamma(B^+ \rightarrow J/\psi(1S)K^*(892)^+)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \rightarrow p\bar{p})] = (3.78^{+0.72+0.28}_{-0.64-0.23}) \times 10^{-6}$ which we divide by our best value $B(J/\psi(1S) \rightarrow p\bar{p}) = (2.120 \pm 0.029) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

³ ABE 96H assumes that $B(B^+ \rightarrow J/\psi K^+) = (1.02 \pm 0.14) \times 10^{-3}$.

⁴ BORTOLETTO 92 reports $(1.3 \pm 0.9 \pm 0.3) \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow J/\psi(1S)K^*(892)^+)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \rightarrow e^+e^-)]$ assuming $B(J/\psi(1S) \rightarrow e^+e^-) = 0.069 \pm 0.009$, which we rescale to our best value $B(J/\psi(1S) \rightarrow e^+e^-) = (5.94 \pm 0.06) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

⁵ ALBRECHT 90J reports $(1.6 \pm 1.1 \pm 0.3) \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow J/\psi(1S)K^*(892)^+)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \rightarrow e^+e^-)]$ assuming $B(J/\psi(1S) \rightarrow e^+e^-) = 0.069 \pm 0.009$, which we rescale to our best value $B(J/\psi(1S) \rightarrow e^+e^-) = (5.94 \pm 0.06) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R65

NODE=S041R65

NODE=S041R65

NEW

NODE=S041R65;LINKAGE=AU

NODE=S041R65;LINKAGE=EP

NODE=S041R65;LINKAGE=AH

NODE=S041R65;LINKAGE=H9

NODE=S041R65;LINKAGE=9H

 $\Gamma(J/\psi(1S)K^*(892)^+)/\Gamma(J/\psi(1S)K^+)$ $\Gamma_{211}/\Gamma_{208}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

1.39 ± 0.09 OUR AVERAGE

| | | | |
|--------------------|---------------------|----------|-----------------------------------|
| 1.37 ± 0.05 ± 0.08 | AUBERT | 05J BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 1.45 ± 0.20 ± 0.17 | ¹ JESSOP | 97 CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 1.92 ± 0.60 ± 0.17 | ABE | 96Q CDF | $p\bar{p}$ |

● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●

| | | | |
|--------------------|----------|---------|---------------------|
| 1.37 ± 0.10 ± 0.08 | 2 AUBERT | 02 BABR | Repl. by AUBERT 05J |
|--------------------|----------|---------|---------------------|

¹ JESSOP 97 assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. The measurement is actually measured as an average over kaon charged and neutral states.

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041S98

NODE=S041S98

NODE=S041S98;LINKAGE=JJ

NODE=S041S98;LINKAGE=EP

 $\Gamma(J/\psi(1S)K(1270)^+)/\Gamma_{\text{total}}$ Γ_{212}/Γ

| VALUE (units 10^{-3}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

1.80 ± 0.34 ± 0.39

| | | | |
|--|------------------|----------|-----------------------------------|
| | ¹ ABE | 01L BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
|--|------------------|----------|-----------------------------------|

¹ Uses the PDG value of $B(B^+ \rightarrow J/\psi(1S)K^+) = (1.00 \pm 0.10) \times 10^{-3}$.

NODE=S041B49

NODE=S041B49

NODE=S041B49;LINKAGE=A1

 $\Gamma(J/\psi(1S)K(1400)^+)/\Gamma(J/\psi(1S)K(1270)^+)$ $\Gamma_{213}/\Gamma_{212}$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

| | | | | |
|-------|----|-----|----------|-----------------------------------|
| <0.30 | 90 | ABE | 01L BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
|-------|----|-----|----------|-----------------------------------|

NODE=S041B50

NODE=S041B50

 $\Gamma(J/\psi(1S)\eta K^+)/\Gamma_{\text{total}}$ Γ_{214}/Γ

| VALUE (units 10^{-5}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

| | | | |
|-------------------------|---------------------|----------|-----------------------------------|
| 10.8 ± 2.3 ± 2.4 | ¹ AUBERT | 04Y BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
|-------------------------|---------------------|----------|-----------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q08

NODE=S041Q08

NODE=S041Q08;LINKAGE=AU

$\Gamma(J/\psi(1S)\eta'K^+)/\Gamma_{\text{total}}$ Γ_{215}/Γ

| VALUE (units 10^{-5}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|------------------|---------|-----------------------------------|
| <8.8 | 90 | ¹ XIE | 07 BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q86
 NODE=S041Q86

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q86;LINKAGE=EP

 $\Gamma(J/\psi(1S)\phi K^+)/\Gamma_{\text{total}}$ Γ_{216}/Γ

| VALUE (units 10^{-5}) | DOCUMENT ID | TECN | COMMENT |
|----------------------------|-------------------------------------|------|---------|
| 5.2±1.7 OUR AVERAGE | Error includes scale factor of 1.2. | | |

NODE=S041B43
 NODE=S041B43

4.4±1.4±0.5 ¹ AUBERT 030 BABR $e^+e^- \rightarrow \Upsilon(4S)$

8.8^{+3.5}_{-3.0}±1.3 ² ANASTASSOV 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B43;LINKAGE=EP
 NODE=S041B43;LINKAGE=AV

² ANASTASSOV 00 finds 10 events on a background of 0.5 ± 0.2 . Assumes equal production of B^0 and B^+ at the $\Upsilon(4S)$, a uniform Dalitz plot distribution, isotropic $J/\psi(1S)$ and ϕ decays, and $B(B^+ \rightarrow J/\psi(1S)\phi K^+) = B(B^0 \rightarrow J/\psi(1S)\phi K^0)$.

 $\Gamma(X(4140)K^+, X \rightarrow J/\psi(1S)\phi)/\Gamma(J/\psi(1S)\phi K^+)$ $\Gamma_{217}/\Gamma_{216}$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-----------------|-----|-------------------|-----------|---------------|
| <0.07 | 90 | ¹ AAIJ | 12AA LHCB | pp at 7 TeV |

NODE=S041T94
 NODE=S041T94

¹ Branching fractions are normalized to 382 ± 22 events of $B^+ \rightarrow J/\psi\phi K^+$.

NODE=S041T94;LINKAGE=AA

 $\Gamma(X(4274)K^+, X \rightarrow J/\psi(1S)\phi)/\Gamma(J/\psi(1S)\phi K^+)$ $\Gamma_{218}/\Gamma_{216}$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-----------------|-----|-------------------|-----------|---------------|
| <0.08 | 90 | ¹ AAIJ | 12AA LHCB | pp at 7 TeV |

NODE=S041T95
 NODE=S041T95

¹ Branching fractions are normalized to 382 ± 22 events of $B^+ \rightarrow J/\psi\phi K^+$.

NODE=S041T95;LINKAGE=AA

 $\Gamma(J/\psi(1S)\omega K^+)/\Gamma_{\text{total}}$ Γ_{219}/Γ

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|--|------------------------------|------|-----------------------------------|
| 3.2±0.1^{+0.6} -0.3 | ¹ DEL-AMO-SA..10B | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C46
 NODE=S041C46

• • • We do not use the following data for averages, fits, limits, etc. • • •

3.5±0.2±0.4 ¹ AUBERT 08W BABR Repl. by DEL-AMO-SANCHEZ 10B

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C46;LINKAGE=EP

 $\Gamma(X(3872)K^+ \times B(X \rightarrow J/\psi\omega))/\Gamma_{\text{total}}$ Γ_{220}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|------------------------------|------|-----------------------------------|
| 6±2±1 | ¹ DEL-AMO-SA..10B | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C21
 NODE=S041C21

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C21;LINKAGE=EP

 $\Gamma(X(3915)K^+ \times B(X \rightarrow J/\psi\omega))/\Gamma_{\text{total}}$ Γ_{221}/Γ

| VALUE (units 10^{-5}) | DOCUMENT ID | TECN | COMMENT |
|--|------------------------------|------|-----------------------------------|
| 3.0^{+0.7+0.5} -0.6-0.3 | ¹ DEL-AMO-SA..10B | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C20
 NODE=S041C20

• • • We do not use the following data for averages, fits, limits, etc. • • •

4.9^{+1.0}_{-0.9}±0.5 ¹ AUBERT 08W BABR Repl. by DEL-AMO-SANCHEZ 10B

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C20;LINKAGE=EP

 $\Gamma(J/\psi(1S)\pi^+)/\Gamma_{\text{total}}$ Γ_{222}/Γ

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|--|------|---------|
| (4.1±0.4) × 10⁻⁵ OUR FIT | Error includes scale factor of 2.6. [(4.9±0.4) × 10 ⁻⁵ OUR 2012 FIT Scale factor = 1.2] | | |

NODE=S041B91
 NODE=S041B91

(3.8±0.6±0.3) × 10⁻⁵ ¹ ABE 03B BELL $e^+e^- \rightarrow \Upsilon(4S)$

NEW

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B91;LINKAGE=EP

$\Gamma(J/\psi(1S)\pi^+)/\Gamma(J/\psi(1S)K^+)$ $\Gamma_{222}/\Gamma_{208}$

| VALUE (units 10^{-2}) | EVTS | DOCUMENT ID | TECN | COMMENT |
|------------------------------|------|-------------|------|---|
| 4.0 ± 0.4 OUR FIT | | | | Error includes scale factor of 3.3. [0.049 ± 0.004 OUR 2012 FIT Scale factor = 1.1] |
| 4.0 ± 0.4 OUR AVERAGE | | | | Error includes scale factor of 3.2. [0.052 ± 0.004 OUR 2012 AVERAGE] |

NODE=S041S97
 NODE=S041S97
 NEW
 NEW

| | | | | | |
|----------------------------|--|-----------|------|------|-----------------------------------|
| 3.83 ± 0.11 ± 0.07 | | AAIJ | 12AC | LHCB | $p\bar{p}$ at 7 TeV |
| 4.86 ± 0.82 ± 0.15 | | ABULENCIA | 09 | CDF | $p\bar{p}$ at 1.96 TeV |
| 5.37 ± 0.45 ± 0.11 | | AUBERT | 04P | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 5.0 $^{+1.9}_{-1.7}$ ± 0.1 | | ABE | 96R | CDF | $p\bar{p}$ 1.8 TeV |
| 5.2 ± 2.4 | | BISHAI | 96 | CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | | |
|--------------------|---|------------------------|-----|------|---------------------|
| 3.91 ± 0.78 ± 0.19 | | AUBERT | 02F | BABR | Repl. by AUBERT 04P |
| 4.3 ± 2.3 | 5 | ¹ ALEXANDER | 95 | CLE2 | Sup. by BISHAI 96 |

¹ Assumes equal production of B^+B^- and $B^0\bar{B}^0$ on $\Upsilon(4S)$.

NODE=S041S97;LINKAGE=A

 $\Gamma(J/\psi(1S)\rho^+)/\Gamma_{total}$ Γ_{223}/Γ

| VALUE (units 10^{-5}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|------|--|
| 5.0 ± 0.7 ± 0.3 | | ¹ AUBERT | 07AC | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | | |
|-----|----|--------|----|------|-----------------------------------|
| <77 | 90 | BISHAI | 96 | CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |
|-----|----|--------|----|------|-----------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041S99
 NODE=S041S99

NODE=S041S99;LINKAGE=EP

 $\Gamma(J/\psi(1S)\pi^+\pi^0_{nonresonant})/\Gamma_{total}$ Γ_{224}/Γ

| VALUE (units 10^{-5}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|------|--|
| <0.73 | 90 | ¹ AUBERT | 07AC | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q87
 NODE=S041Q87

NODE=S041Q87;LINKAGE=EP

 $\Gamma(J/\psi(1S)a_1(1260)^+)/\Gamma_{total}$ Γ_{225}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|----------------------------------|-----|-------------|------|--|
| <1.2 × 10⁻³ | 90 | BISHAI | 96 | CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B1
 NODE=S041B1

 $\Gamma(J/\psi(1S)\rho^0)/\Gamma_{total}$ Γ_{226}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|-------------------------------|-----|-------------|------|---------|
| 11.8 ± 3.1 OUR AVERAGE | | | | |

| | | | | | |
|-----------------------------|--|------------------|----|------|-----------------------------------|
| 11.7 ± 2.8 $^{+1.8}_{-2.3}$ | | ¹ XIE | 05 | BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
|-----------------------------|--|------------------|----|------|-----------------------------------|

| | | | | | |
|-----------------|--|---------------------|-----|------|-----------------------------------|
| 12 $^{+9}_{-6}$ | | ¹ AUBERT | 03K | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
|-----------------|--|---------------------|-----|------|-----------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | | |
|-----|----|------|----|------|-----------------------------------|
| <41 | 90 | ZANG | 04 | BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
|-----|----|------|----|------|-----------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C1
 NODE=S041C1

NODE=S041C1;LINKAGE=EP

 $\Gamma(J/\psi(1S)\bar{\Sigma}^0\rho)/\Gamma_{total}$ Γ_{227}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|----------------------------------|-----|------------------|------|--|
| <1.1 × 10⁻⁵ | 90 | ¹ XIE | 05 | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C11
 NODE=S041C11

NODE=S041C11;LINKAGE=EP

 $\Gamma(J/\psi(1S)D^+)/\Gamma_{total}$ Γ_{228}/Γ

| VALUE (units 10^{-5}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|------|--|
| <12 | 90 | ¹ AUBERT | 05U | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q44
 NODE=S041Q44

NODE=S041Q44;LINKAGE=EP

 $\Gamma(J/\psi(1S)\bar{D}^0\pi^+)/\Gamma_{total}$ Γ_{229}/Γ

| VALUE (units 10^{-5}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|--------------------|------|--|
| <2.5 | 90 | ¹ ZHANG | 05B | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|------|----|---------------------|-----|--|
| <5.2 | 90 | ¹ AUBERT | 05R | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |
|------|----|---------------------|-----|--|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q45
 NODE=S041Q45

NODE=S041Q45;LINKAGE=EP

$\Gamma(\psi(2S)\pi^+)/\Gamma_{\text{total}}$ VALUE (units 10^{-5})**2.44 ± 0.22 ± 0.20**¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. Γ_{230}/Γ NODE=S041C08
NODE=S041C08

NODE=S041C08;LINKAGE=EP

 $\Gamma(\psi(2S)\pi^+)/\Gamma(\psi(2S)K^+)$ VALUE (units 10^{-2})**3.97 ± 0.29 OUR AVERAGE**[(4.0 ± 0.4) × 10^{-2} OUR 2012 AVERAGE]

3.95 ± 0.40 ± 0.12

AAIJ

12AC

LHCB pp at 7 TeV

3.99 ± 0.36 ± 0.17

BHARDWAJ

08

BELL $e^+e^- \rightarrow \Upsilon(4S)$ $\Gamma_{230}/\Gamma_{231}$ NODE=S041C09
NODE=S041C09

NEW

 $\Gamma(\psi(2S)K^+)/\Gamma_{\text{total}}$ VALUE (units 10^{-4})**6.27 ± 0.24 OUR FIT**[(6.39 ± 0.33) × 10^{-4} OUR 2012 FIT]**6.5 ± 0.4 OUR AVERAGE**

6.65 ± 0.17 ± 0.55

¹ GULER

11

BELL $e^+e^- \rightarrow \Upsilon(4S)$

4.9 ± 1.6 ± 0.4

² AUBERT

06E

BABR $e^+e^- \rightarrow \Upsilon(4S)$

6.17 ± 0.32 ± 0.44

¹ AUBERT

05J

BABR $e^+e^- \rightarrow \Upsilon(4S)$

7.8 ± 0.7 ± 0.9

¹ RICHICHI

01

CLE2 $e^+e^- \rightarrow \Upsilon(4S)$

18 ± 8 ± 4

5

¹ ALBRECHT

90J

ARG $e^+e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

6.9 ± 0.6

¹ ABE

03B

BELL Repl. by GULER 11

6.4 ± 0.5 ± 0.8

¹ AUBERT

02

BABR Repl. by AUBERT 05J

6.1 ± 2.3 ± 0.9

7

¹ ALAM

94

CLE2 Repl. by RICHICHI 01

<5 at 90% CL

¹ BORTOLETTO

92

CLEO $e^+e^- \rightarrow \Upsilon(4S)$

22 ± 17

3

³ ALBRECHT

87D

ARG $e^+e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² Perform measurements of absolute branching fractions using a missing mass technique.³ ALBRECHT 87D assume $B^+B^-/B^0\bar{B}^0$ ratio is 55/45. Superseded by ALBRECHT 90J.NODE=S041R20
NODE=S041R20

NEW

NODE=S041R20;LINKAGE=EP

NODE=S041R20;LINKAGE=AT

NODE=S041R20;LINKAGE=C

 $\Gamma(\psi(2S)K^+)/\Gamma(J/\psi(1S)K^+)$

VALUE

0.610 ± 0.019 OUR FIT

[0.629 ± 0.035 OUR 2012 FIT]

0.601 ± 0.022 OUR AVERAGE

[0.60 ± 0.07 OUR 2012 AVERAGE]

0.602 ± 0.018 ± 0.015

^{1,2} AAIJ

12L

LHCB pp at 7 TeV

0.63 ± 0.05 ± 0.08

ABAZOV

09Y

D0 $p\bar{p}$ at 1.96 TeV

0.558 ± 0.082 ± 0.056

ABE

98O

CDF $p\bar{p}$ 1.8 TeV

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.64 ± 0.06 ± 0.07

³ AUBERT

02

BABR $e^+e^- \rightarrow \Upsilon(4S)$ ¹ AAIJ 12L reports $0.594 \pm 0.006 \pm 0.016 \pm 0.015$ from a measurement of $[\Gamma(B^+ \rightarrow \psi(2S)K^+)/\Gamma(B^+ \rightarrow J/\psi(1S)K^+)] \times [B(J/\psi(1S) \rightarrow e^+e^-)] / [B(\psi(2S) \rightarrow e^+e^-)]$ assuming $B(J/\psi(1S) \rightarrow e^+e^-) = (5.94 \pm 0.06) \times 10^{-2}$, $B(\psi(2S) \rightarrow e^+e^-) = (7.72 \pm 0.17) \times 10^{-3}$, which we rescale to our best values $B(J/\psi(1S) \rightarrow e^+e^-) = (5.94 \pm 0.06) \times 10^{-2}$, $B(\psi(2S) \rightarrow e^+e^-) = (7.82 \pm 0.17) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best values.² Assumes $B(J/\psi \rightarrow \mu^+\mu^-) / B(\psi(2S) \rightarrow \mu^+\mu^-) = B(J/\psi \rightarrow e^+e^-) / B(\psi(2S) \rightarrow e^+e^-) = 7.69 \pm 0.19$.³ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041B46
NODE=S041B46

NEW

NEW

NODE=S041B46;LINKAGE=AA

NODE=S041B46;LINKAGE=AI

NODE=S041B46;LINKAGE=EP

 $\Gamma(\psi(2S)K^*(892)^+)/\Gamma_{\text{total}}$ VALUE (units 10^{-4})**6.7 ± 1.4 OUR AVERAGE**

5.92 ± 0.85 ± 0.89

¹ AUBERT

05J

BABR $e^+e^- \rightarrow \Upsilon(4S)$

9.2 ± 1.9 ± 1.2

¹ RICHICHI

01

CLE2 $e^+e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

<30

90

¹ ALAM

94

CLE2 Repl. by RICHICHI 01

<35

90

¹ BORTOLETTO

92

CLEO $e^+e^- \rightarrow \Upsilon(4S)$

<49

90

¹ ALBRECHT

90J

ARG $e^+e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. Γ_{232}/Γ NODE=S041R66
NODE=S041R66

NODE=S041R66;LINKAGE=EP

$\Gamma(\psi(2S)K^*(892)^+)/\Gamma(\psi(2S)K^+)$ $\Gamma_{232}/\Gamma_{231}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-----------------------|-------------|----------|-----------------------------------|
| 0.96±0.15±0.09 | AUBERT | 05J BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q75
 NODE=S041Q75

 $\Gamma(\psi(2S)K^0\pi^+)/\Gamma_{total}$ Γ_{233}/Γ

| VALUE (units 10^{-3}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

NODE=S041C75
 NODE=S041C75

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.588±0.034 ¹ AUBERT 09AA BABR $e^+e^- \rightarrow \Upsilon(4S)$

¹ Does not report systematic uncertainties.

NODE=S041C75;LINKAGE=AU

 $\Gamma(\psi(2S)K^+\pi^+\pi^-)/\Gamma_{total}$ Γ_{234}/Γ

| VALUE (units 10^{-4}) | EVTS | DOCUMENT ID | TECN | COMMENT |
|--------------------------|------|-------------|------|---------|
|--------------------------|------|-------------|------|---------|

4.3 ± 0.5 OUR AVERAGE

4.31± 0.20±0.50 ¹ GULER 11 BELL $e^+e^- \rightarrow \Upsilon(4S)$

19 ±11 ±4 ³ ¹ ALBRECHT 90J ARG $e^+e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R67
 NODE=S041R67

NODE=S041R67;LINKAGE=EP

 $\Gamma(\psi(3770)K^+)/\Gamma_{total}$ Γ_{235}/Γ

| VALUE (units 10^{-3}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

0.49±0.13 OUR AVERAGE

3.5 ±2.5 ±0.3 ¹ AUBERT 06E BABR $e^+e^- \rightarrow \Upsilon(4S)$

0.48±0.11±0.07 ² CHISTOV 04 BELL $e^+e^- \rightarrow \Upsilon(4S)$

¹ Perform measurements of absolute branching fractions using a missing mass technique.

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q13
 NODE=S041Q13

NODE=S041Q13;LINKAGE=AT

NODE=S041Q13;LINKAGE=CH

 $\Gamma(\psi(3770)K^+ \times B(\psi \rightarrow D^0\bar{D}^0))/\Gamma_{total}$ Γ_{236}/Γ

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

1.6 ±0.4 OUR AVERAGE Error includes scale factor of 1.1.

1.41±0.30±0.22 ¹ AUBERT 08B BABR $e^+e^- \rightarrow \Upsilon(4S)$

2.2 ±0.5 ±0.3 ¹ BRODZICKA 08 BELL $e^+e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

3.4 ±0.8 ±0.5 ¹ CHISTOV 04 BELL Repl. by BRODZICKA 08

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q14
 NODE=S041Q14

NODE=S041Q14;LINKAGE=EP

 $\Gamma(\psi(3770)K^+ \times B(\psi \rightarrow D^+D^-))/\Gamma_{total}$ Γ_{237}/Γ

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

0.94±0.35 OUR AVERAGE

0.84±0.32±0.21 ¹ AUBERT 08B BABR $e^+e^- \rightarrow \Upsilon(4S)$

1.4 ±0.8 ±0.2 ¹ CHISTOV 04 BELL $e^+e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q15
 NODE=S041Q15

NODE=S041Q15;LINKAGE=EP

 $\Gamma(\chi_{c0}\pi^+ \times B(\chi_{c0} \rightarrow \pi^+\pi^-))/\Gamma_{total}$ Γ_{238}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

<0.1 90 ¹ AUBERT 09L BABR $e^+e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

<0.3 90 ¹ AUBERT,B 05G BABR Repl. by AUBERT 09L

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041S04
 NODE=S041S04

NODE=S041S04;LINKAGE=EP

 $\Gamma(\chi_{c0}(1P)K^+)/\Gamma_{total}$ Γ_{239}/Γ

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

1.49^{+0.15}_{-0.13} OUR AVERAGE

[(1.34^{+0.19}_{-0.16}) × 10^{-4} OUR 2012 AVERAGE]

1.84±0.25±0.14 ^{1,2} LEES 120 BABR $e^+e^- \rightarrow \Upsilon(4S)$

1.68±0.32±0.16 ^{1,3} LEES 120 BABR $e^+e^- \rightarrow \Upsilon(4S)$

1.8 ±0.8 ±0.1 ⁴ LEES 11I BABR $e^+e^- \rightarrow \Upsilon(4S)$

1.24^{+0.28}_{-0.25} ±0.06 ^{1,5} AUBERT 08AI BABR $e^+e^- \rightarrow \Upsilon(4S)$

4.7 ±2.2 ±0.3 ⁶ AUBERT,BE 06M BABR $e^+e^- \rightarrow \Upsilon(4S)$

1.12±0.12^{+0.30}_{-0.20} ¹ GARMASH 06 BELL $e^+e^- \rightarrow \Upsilon(4S)$

NEW

OCCUR=2

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|---------------------------------|----|------------------------|----------|-----------------------------------|
| <5 | 90 | 1,7 WICHT | 08 BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| <1.8 | 90 | ⁸ AUBERT | 06E BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| $1.84 \pm 0.32 \pm 0.31$ | | ^{1,9} AUBERT | 06O BABR | Repl. by LEES 12O |
| <8.9 | 90 | ¹ AUBERT | 05K BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| $1.39 \pm 0.49 \pm 0.11$ | | ¹⁰ AUBERT,B | 05N BABR | Repl. by AUBERT 08AI |
| $1.96 \pm 0.35^{+2.00}_{-0.42}$ | | ¹ GARMASH | 05 BELL | Repl. by GARMASH 06 |
| 2.7 ± 0.7 | | ¹¹ AUBERT | 04T BABR | Repl. by AUBERT,B 04P |
| $3.0 \pm 0.8 \pm 0.3$ | | ¹² AUBERT,B | 04P BABR | Repl. by AUBERT,B 05N |
| $6.0^{+2.1}_{-1.8} \pm 1.1$ | | ¹³ ABE | 02B BELL | Repl. by GARMASH 05 |
| <4.8 | 90 | ¹⁴ EDWARDS | 01 CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Measured in the $B^+ \rightarrow K^+ K^- K^+$ decay.

³ Measured in the $B^+ \rightarrow K^+ K_S^0 K_S^0$ decay.

⁴ LEES 11I reports $[\Gamma(B^+ \rightarrow \chi_{c0}(1P) K^+)/\Gamma_{\text{total}}] \times [B(\chi_{c0}(1P) \rightarrow \pi\pi)] = (1.53 \pm 0.66 \pm 0.27) \times 10^{-6}$ which we divide by our best value $B(\chi_{c0}(1P) \rightarrow \pi\pi) = (8.5 \pm 0.4) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

⁵ AUBERT 08AI reports $(0.70 \pm 0.10^{+0.12}_{-0.10}) \times 10^{-6}$ for $B(B^+ \rightarrow \chi_{c0} K^+) \times B(\chi_{c0} \rightarrow \pi^+ \pi^-)$. We compute $B(B^+ \rightarrow \chi_{c0} K^+)$ using the PDG value $B(\chi_{c0} \rightarrow \pi\pi) = (8.5 \pm 0.4) \times 10^{-3}$ and 2/3 for the $\pi^+ \pi^-$ fraction. Our first error is their experiment's error and the second error is systematic error from using our best value.

⁶ AUBERT, BE 06M reports $[\Gamma(B^+ \rightarrow \chi_{c0}(1P) K^+)/\Gamma_{\text{total}}] \times [B(\chi_{c0}(1P) \rightarrow \gamma J/\psi(1S))] = (6.1 \pm 2.6 \pm 1.1) \times 10^{-6}$ which we divide by our best value $B(\chi_{c0}(1P) \rightarrow \gamma J/\psi(1S)) = (1.30 \pm 0.07) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. The significance of the observed signal is 2.4σ .

⁷ WICHT 08 reports $[\Gamma(B^+ \rightarrow \chi_{c0}(1P) K^+)/\Gamma_{\text{total}}] \times [B(\chi_{c0}(1P) \rightarrow \gamma\gamma)] < 0.11 \times 10^{-6}$ which we divide by our best value $B(\chi_{c0}(1P) \rightarrow \gamma\gamma) = 2.25 \times 10^{-4}$.

⁸ Perform measurements of absolute branching fractions using a missing mass technique.

⁹ Measured in the $B^+ \rightarrow K^+ K^- K^+$ decay.

¹⁰ AUBERT,B 05N reports $(0.66 \pm 0.22 \pm 0.08) \times 10^{-6}$ for $B(B^+ \rightarrow \chi_c^0 K^+) \times B(\chi_c^0 \rightarrow \pi^+ \pi^-)$. We compute $B(B^+ \rightarrow \chi_c^0 K^+)$ using the PDG value $B(\chi_c^0 \rightarrow \pi^+ \pi^-) = (7.1 \pm 0.6) \times 10^{-3}$ and 2/3 for the $\pi^+ \pi^-$ fraction.

¹¹ The measurement performed using decay channels $\chi_c^0 \rightarrow \pi^+ \pi^-$ and $\chi_c^0 \rightarrow K^+ K^-$. The ratio of the branching ratios for these channels is found to be consistent with world average.

¹² AUBERT 04P reports $B(B^+ \rightarrow \chi_c^0 K^+) \times B(\chi_c^0 \rightarrow \pi^+ \pi^-) = (1.5 \pm 0.4 \pm 0.1) \times 10^{-6}$ and used PDG value of $B(\chi_c^0 \rightarrow \pi\pi) = (7.4 \pm 0.8) \times 10^{-3}$ and Clebsh-Gordan coefficient to compute $B(B^{\pm} \rightarrow \chi_c^0 K^+)$.

¹³ ABE 02B measures the ratio of $B(B^+ \rightarrow \chi_c^0 K^+)/B(B^+ \rightarrow J/\psi(1S) K^+) = 0.60 + 0.21 - 0.18 \pm 0.05 \pm 0.08$, where the third error is due to the uncertainty in the $B(\chi_c^0 \rightarrow \pi^+ \pi^-)$, and uses $B(B^+ \rightarrow J/\psi(1S) K^+) = (10.0 \pm 1.0) \times 10^{-4}$ to obtain the result.

¹⁴ EDWARDS 01 assumes equal production of B^0 and B^+ at the $\Upsilon(4S)$. The correlated uncertainties (28.3)% from $B(J/\psi(1S) \rightarrow \gamma\eta_c)$ in those modes have been accounted for.

NODE=S041B41;LINKAGE=EP

NODE=S041B41;LINKAGE=LA

NODE=S041B41;LINKAGE=LB

NODE=S041B41;LINKAGE=LE

NODE=S041B41;LINKAGE=UB

NODE=S041B41;LINKAGE=AP

NODE=S041B41;LINKAGE=WI

NODE=S041B41;LINKAGE=UT

NODE=S041B41;LINKAGE=AE

NODE=S041B41;LINKAGE=AT

NODE=S041B41;LINKAGE=AU

NODE=S041B41;LINKAGE=AB

NODE=S041B41;LINKAGE=B4

NODE=S041B41;LINKAGE=A

$\Gamma(\chi_{c0} K^*(892)^+)/\Gamma_{\text{total}}$

Γ_{240}/Γ

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|-----------|-----------------------------------|
| < 2.1 | 90 | ¹ AUBERT | 08BD BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q70

NODE=S041Q70

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-------|----|---------------------|----------|----------------------|
| <28.6 | 90 | ¹ AUBERT | 05K BABR | Repl. by AUBERT 08BD |
|-------|----|---------------------|----------|----------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q70;LINKAGE=EP

$\Gamma(\chi_{c2} \pi^+ \times B(\chi_{c2} \rightarrow \pi^+ \pi^-))/\Gamma_{\text{total}}$

Γ_{241}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|----------|-----------------------------------|
| <0.1 | 90 | ¹ AUBERT | 09L BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C57

NODE=S041C57

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C57;LINKAGE=EP

$\Gamma(\chi_{c2} K^+)/\Gamma_{\text{total}}$ Γ_{242}/Γ

| VALUE (units 10^{-5}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|--------------------------|----------|------------------------------------|
| $1.11^{+0.36}_{-0.34} \pm 0.09$ | | ¹ BHARDWAJ 11 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| < 1.8 | 90 | ² AUBERT | 09B BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 20 | 90 | ³ AUBERT | 06E BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 2.9 | 90 | ¹ SONI | 06 BELL | Repl. by BHARDWAJ 11 |
| < 3.0 | 90 | ¹ AUBERT | 05K BABR | Repl. by AUBERT 06E |

NODE=S041Q72
 NODE=S041Q72

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Uses $\chi_{c1,2} \rightarrow J/\psi\gamma$. Assumes $B(\Upsilon(4S) \rightarrow B^+ B^-) = (51.6 \pm 0.6)\%$ and $B(\Upsilon(4S) \rightarrow B^0 \bar{B}^0) = (48.4 \pm 0.6)\%$.

³ Perform measurements of absolute branching fractions using a missing mass technique.

NODE=S041Q72;LINKAGE=EP

NODE=S041Q72;LINKAGE=AU

NODE=S041Q72;LINKAGE=AT

 $\Gamma(B^+ \rightarrow \chi_{c2} K^+)/\Gamma_{\text{total}} \times \Gamma(\chi_{c2}(1P) \rightarrow \gamma\gamma)/\Gamma_{\text{total}}$ $\Gamma_{242}/\Gamma \times \Gamma_{63}^{\chi_{c2}(1P)}/\Gamma_{\chi_{c2}(1P)}$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-----------------------|------|------------------------------------|
| < 0.09 | 90 | ¹ WICHT 08 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C13
 NODE=S041C13

NODE=S041C13;LINKAGE=EP

 $\Gamma(\chi_{c2} K^*(892)^+)/\Gamma_{\text{total}}$ Γ_{243}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|---------------------|----------|------------------------------------|
| < 12 $\times 10^{-5}$ | 90 | ¹ AUBERT | 09B BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| < 12.7 $\times 10^{-5}$ | 90 | ² SONI | 06 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 1.2 $\times 10^{-5}$ | 90 | ² AUBERT | 05K BABR | Repl. by AUBERT 09B |

¹ Uses $\chi_{c1,2} \rightarrow J/\psi\gamma$. Assumes $B(\Upsilon(4S) \rightarrow B^+ B^-) = (51.6 \pm 0.6)\%$ and $B(\Upsilon(4S) \rightarrow B^0 \bar{B}^0) = (48.4 \pm 0.6)\%$.

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q73;LINKAGE=AU

NODE=S041Q73;LINKAGE=EP

 $\Gamma(\chi_{c1}(1P)\pi^+)/\Gamma_{\text{total}}$ Γ_{244}/Γ

| VALUE (units 10^{-5}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----------------------|------|------------------------------------|
| $2.2 \pm 0.4 \pm 0.3$ | ¹ KUMAR 06 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041RC1
 NODE=S041RC1

NODE=S041RC1;LINKAGE=EP

 $\Gamma(\chi_{c1}(1P)K^+)/\Gamma_{\text{total}}$ Γ_{245}/Γ

| VALUE (units 10^{-4}) | EVTS | DOCUMENT ID | TECN | COMMENT |
|---|-------------|-----------------------------|------|------------------------------------|
| 4.79 ± 0.23 | OUR AVERAGE | | | |
| $4.94 \pm 0.11 \pm 0.33$ | | ¹ BHARDWAJ 11 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $4.5 \pm 0.1 \pm 0.3$ | | ² AUBERT 09B | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $8.1 \pm 1.4 \pm 0.7$ | | ³ AUBERT 06E | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $15.5 \pm 5.4 \pm 2.0$ | | ⁴ ACOSTA 02F | CDF | $p\bar{p}$ 1.8 TeV |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $5.1 \pm 0.4 \pm 0.2$ | | ⁵ AUBERT, BE 06M | BABR | Repl. by AUBERT 09B |
| $4.49 \pm 0.19 \pm 0.53$ | | ¹ SONI 06 | BELL | Repl. by BHARDWAJ 11 |
| $5.79 \pm 0.26 \pm 0.65$ | | ¹ AUBERT 05J | BABR | Repl. by AUBERT, BE 06M |
| $5.9 \pm 0.9 \pm 0.2$ | | ⁶ AUBERT 02 | BABR | Repl. by AUBERT 05J |
| $9.7 \pm 4.0 \pm 0.9$ | 6 | ¹ ALAM 94 | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $19 \pm 13 \pm 6$ | | ⁷ ALBRECHT 92E | ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Uses $\chi_{c1,2} \rightarrow J/\psi\gamma$. Assumes $B(\Upsilon(4S) \rightarrow B^+ B^-) = (51.6 \pm 0.6)\%$ and $B(\Upsilon(4S) \rightarrow B^0 \bar{B}^0) = (48.4 \pm 0.6)\%$.

³ Perform measurements of absolute branching fractions using a missing mass technique.

⁴ ACOSTA 02F uses as reference of $B(B \rightarrow J/\psi(1S)K^+) = (10.1 \pm 0.6) \times 10^{-4}$. The second error includes the systematic error and the uncertainties of the branching ratio.

⁵ AUBERT, BE 06M reports $[\Gamma(B^+ \rightarrow \chi_{c1}(1P)K^+)/\Gamma_{\text{total}}] \times [B(\chi_{c1}(1P) \rightarrow \gamma J/\psi(1S))] = (1.76 \pm 0.07 \pm 0.12) \times 10^{-4}$ which we divide by our best value $B(\chi_{c1}(1P) \rightarrow \gamma J/\psi(1S)) = (34.8 \pm 1.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

⁶ AUBERT 02 reports $(7.5 \pm 0.9 \pm 0.8) \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow \chi_{c1}(1P)K^+)/\Gamma_{\text{total}}] \times [B(\chi_{c1}(1P) \rightarrow \gamma J/\psi(1S))]$ assuming $B(\chi_{c1}(1P) \rightarrow \gamma J/\psi(1S)) = 0.273 \pm 0.016$, which we rescale to our best value $B(\chi_{c1}(1P) \rightarrow \gamma J/\psi(1S)) = (34.8 \pm 1.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

⁷ ALBRECHT 92E assumes no $\chi_{c2}(1P)$ production and $B(\Upsilon(4S) \rightarrow B^+ B^-) = 50\%$.

NODE=S041R90
 NODE=S041R90

NODE=S041R90;LINKAGE=EP

NODE=S041R90;LINKAGE=AU

NODE=S041R90;LINKAGE=AT

NODE=S041R90;LINKAGE=CA

NODE=S041R90;LINKAGE=AP

NODE=S041R90;LINKAGE=J3

NODE=S041R90;LINKAGE=A

$\Gamma(\chi_{c1}(1P)K^+)/\Gamma(J/\psi(1S)K^+)$ $\Gamma_{245}/\Gamma_{208}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------------|--------------------------------|------|---------|
| 0.59±0.07 OUR AVERAGE | [0.60 ± 0.07 OUR 2012 AVERAGE] | | |

NODE=S041B47
 NODE=S041B47
 NEW

0.59±0.07±0.02¹ AUBERT 02 BABR $e^+e^- \rightarrow \Upsilon(4S)$

¹ AUBERT 02 reports $0.75 \pm 0.08 \pm 0.05$ from a measurement of $[\Gamma(B^+ \rightarrow \chi_{c1}(1P)K^+)/\Gamma(B^+ \rightarrow J/\psi(1S)K^+)] \times [B(\chi_{c1}(1P) \rightarrow \gamma J/\psi(1S))]$ assuming $B(\chi_{c1}(1P) \rightarrow \gamma J/\psi(1S)) = 0.273 \pm 0.016$, which we rescale to our best value $B(\chi_{c1}(1P) \rightarrow \gamma J/\psi(1S)) = (34.8 \pm 1.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B47;LINKAGE=J3

 $\Gamma(\chi_{c1}(1P)\pi^+)/\Gamma(\chi_{c1}(1P)K^+)$ $\Gamma_{244}/\Gamma_{245}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------------|--------------------|------|--|
| 0.043±0.008±0.003 | ¹ KUMAR | 06 | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041QC1
 NODE=S041QC1

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041QC1;LINKAGE=EP

 $\Gamma(\chi_{c1}(1P)K^0\pi^+)/\Gamma(J/\psi(1S)K^0\pi^+)$ $\Gamma_{246}/\Gamma_{209}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------------|------|--|
| 0.495±0.029±0.021 | ¹ LEES | 12B | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C73
 NODE=S041C73

¹ LEES 12B reports $0.501 \pm 0.024 \pm 0.028$ from a measurement of $[\Gamma(B^+ \rightarrow \chi_{c1}(1P)K^0\pi^+)/\Gamma(B^+ \rightarrow J/\psi(1S)K^0\pi^+)] \times [B(\chi_{c1}(1P) \rightarrow \gamma J/\psi(1S))]$ assuming $B(\chi_{c1}(1P) \rightarrow \gamma J/\psi(1S)) = (34.4 \pm 1.5) \times 10^{-2}$, which we rescale to our best value $B(\chi_{c1}(1P) \rightarrow \gamma J/\psi(1S)) = (34.8 \pm 1.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041C73;LINKAGE=LE

 $\Gamma(\chi_{c1}(1P)K^*(892)^+)/\Gamma_{total}$ Γ_{247}/Γ

| VALUE (units 10^{-4}) | CL% | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-----|-------------------------------------|------|---------|
| 3.0 ± 0.6 OUR AVERAGE | | Error includes scale factor of 1.1. | | |

NODE=S041R95
 NODE=S041R95

2.6 ± 0.5 ± 0.4 ¹ AUBERT 09B BABR $e^+e^- \rightarrow \Upsilon(4S)$ 4.05 ± 0.59 ± 0.95 ² SONI 06 BELL $e^+e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

2.94 ± 0.95 ± 0.98 ² AUBERT 05J BABR Repl. by AUBERT 09B<21 90 ² ALAM 94 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$

¹ Uses $\chi_{c1,2} \rightarrow J/\psi\gamma$. Assumes $B(\Upsilon(4S) \rightarrow B^+B^-) = (51.6 \pm 0.6)\%$ and $B(\Upsilon(4S) \rightarrow B^0\bar{B}^0) = (48.4 \pm 0.6)\%$.

NODE=S041R95;LINKAGE=AU

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R95;LINKAGE=EP

 $\Gamma(\chi_{c1}(1P)K^*(892)^+)/\Gamma(\chi_{c1}(1P)K^+)$ $\Gamma_{247}/\Gamma_{245}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-----------------------|-------------|------|--|
| 0.51±0.17±0.16 | AUBERT | 05J | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q76
 NODE=S041Q76

 $\Gamma(h_c(1P)K^+)/\Gamma_{total}$ Γ_{248}/Γ

| VALUE (units 10^{-5}) | EVT% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|------|-------------------|------|--|
| <3.8 | 90 | ¹ FANG | 06 | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q85
 NODE=S041Q85

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$ and $B(h_c \rightarrow \eta_c\gamma) = 50\%$.

NODE=S041Q85;LINKAGE=EP

 $\Gamma(K^0\pi^+)/\Gamma_{total}$ Γ_{249}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|-------------------------------|-----|--|------|---------|
| 23.8 ± 0.7 OUR AVERAGE | | [(23.1 ± 1.0) × 10 ⁻⁶ OUR 2012 AVERAGE] | | |

NODE=S041R5
 NODE=S041R5

NEW

23.97 ± 0.53 ± 0.71 ¹ DUH 13 BELL $e^+e^- \rightarrow \Upsilon(4S)$ 23.9 ± 1.1 ± 1.0 ¹ AUBERT,BE 06C BABR $e^+e^- \rightarrow \Upsilon(4S)$ 18.8 ^{+3.7} _{-3.3} ^{+2.1} _{-1.8} ¹ BORNHEIM 03 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

22.8 ^{+0.8} _{-0.7} ± 1.3 ¹ LIN 07 BELL Repl. by DUH 1326.0 ± 1.3 ± 1.0 ¹ AUBERT,BE 05E BABR Repl. by AUBERT,BE 06C22.3 ± 1.7 ± 1.1 ¹ AUBERT 04M BABR Repl. by AUBERT,BE 05E22.0 ± 1.9 ± 1.1 ¹ CHAO 04 BELL Repl. by LIN 0719.4 ^{+3.1} _{-3.0} ± 1.6 ¹ CASEY 02 BELL Repl. by CHAO 0413.7 ^{+5.7} _{-4.8} ^{+1.9} _{-1.8} ¹ ABE 01H BELL Repl. by CASEY 0218.2 ^{+3.3} _{-3.0} ± 2.0 ¹ AUBERT 01E BABR Repl. by AUBERT 04M

| | | | | | |
|------|-----------|-----------|-----------------------------|------|--|
| 18.2 | ± 4.6 | ± 1.6 | ¹ CRONIN-HEN..00 | CLE2 | Repl. by BORNHEIM 03 |
| 23 | ± 11 | ± 3.6 | GODANG | 98 | CLE2 Repl. by CRONIN-HENNESSY 00 |
| < 48 | 90 | | ASNER | 96 | CLE2 Repl. by GODANG 98 |
| <190 | 90 | | ALBRECHT | 91B | ARG $e^+e^- \rightarrow \Upsilon(4S)$ |
| <100 | 90 | | ² AVERY | 89B | CLEO $e^+e^- \rightarrow \Upsilon(4S)$ |
| <680 | 90 | | AVERY | 87 | CLEO $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² AVERY 89B reports $< 9 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\bar{B}^0$. We rescale to 50%.

NODE=S041R5;LINKAGE=EP
NODE=S041R5;LINKAGE=A1

$\Gamma(K^+\pi^0)/\Gamma_{\text{total}}$

Γ_{250}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|-----------------------|------|--|
| 12.9 ± 0.5 | | | | OUR AVERAGE |
| [(12.9 ± 0.6) × 10 ⁻⁶ OUR 2012 AVERAGE] | | | | |
| 12.62 ± 0.31 ± 0.56 | | ¹ DUH | 13 | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |
| 13.6 ± 0.6 ± 0.7 | | ¹ AUBERT | 07BC | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |
| 12.9 ± 2.4 ± 1.2 -2.2 -1.1 | | ¹ BORNHEIM | 03 | CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R97
NODE=S041R97
NEW

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|---|----|-----------------------------|------|----------------------------------|
| 12.4 ± 0.5 ± 0.6 | | ¹ LIN | 07A | BELL Repl. by DUH 13 |
| 12.0 ± 0.7 ± 0.6 | | ¹ AUBERT | 05L | BABR Repl. by AUBERT 07BC |
| 12.0 ± 1.3 ± 1.3 -0.9 | | ¹ CHAO | 04 | BELL Repl. by LIN 07A |
| 12.8 ± 1.2 ± 1.0 -1.1 | | ¹ AUBERT | 03L | BABR Repl. by AUBERT 05L |
| 13.0 ± 2.5 ± 1.3 -2.4 | | ¹ CASEY | 02 | BELL Repl. by CHAO 04 |
| 16.3 ± 3.5 ± 1.6 -3.3 -1.8 | | ¹ ABE | 01H | BELL Repl. by CASEY 02 |
| 10.8 ± 2.1 ± 1.0 -1.9 | | ¹ AUBERT | 01E | BABR Repl. by AUBERT 03L |
| 11.6 ± 3.0 ± 1.4 -2.7 -1.3 | | ¹ CRONIN-HEN..00 | CLE2 | Repl. by BORNHEIM 03 |
| <16 | 90 | GODANG | 98 | CLE2 Repl. by CRONIN-HENNESSY 00 |
| <14 | 90 | ASNER | 96 | CLE2 Repl. by GODANG 98 |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R97;LINKAGE=EP

$\Gamma(K^+\pi^0)/\Gamma(K^0\pi^+)$

$\Gamma_{250}/\Gamma_{249}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|--|
| 0.54 ± 0.03 ± 0.04 | LIN | 07A | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |
| 2.38 ± 0.98 ± 0.39 -1.10 -0.26 | ABE | 01H | BELL Repl. by LIN 07A |

• • • We do not use the following data for averages, fits, limits, etc. • • •

NODE=S041B44
NODE=S041B44

$\Gamma(\eta'K^+)/\Gamma_{\text{total}}$

Γ_{251}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|-----------------------------|------------------------|------|--|
| 70.6 ± 2.5 | | | OUR AVERAGE |
| 71.5 ± 1.3 ± 3.2 | ¹ AUBERT | 09AV | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |
| 64 ± 10 ± 2 -9 | ^{1,2} WICHT | 08 | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |
| 69.2 ± 2.2 ± 3.7 | ¹ SCHUEMANN | 06 | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |
| 80 ± 10 ± 7 -9 | ¹ RICHICHI | 00 | CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|------------------------------|---------------------|------|----------------------------|
| 70.0 ± 1.5 ± 2.8 | ¹ AUBERT | 07AE | BABR Repl. by AUBERT 09AV |
| 68.9 ± 2.0 ± 3.2 | ¹ AUBERT | 05M | BABR Repl. by AUBERT 07AE |
| 76.9 ± 3.5 ± 4.4 | ¹ AUBERT | 03W | BABR Repl. by AUBERT 05M |
| 79 ± 12 ± 9 -11 | ¹ ABE | 01M | BELL Repl. by SCHUEMANN 06 |
| 70 ± 8 ± 5 | ¹ AUBERT | 01G | BABR Repl. by AUBERT 03W |
| 65 ± 15 ± 9 -14 | BEHRENS | 98 | CLE2 Repl. by RICHICHI 00 |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² WICHT 08 reports $[\Gamma(B^+ \rightarrow \eta'K^+)/\Gamma_{\text{total}}] \times [B(\eta'(958) \rightarrow \gamma\gamma)] = (1.40 \pm 0.16 \pm 0.15 \pm 0.12) \times 10^{-6}$ which we divide by our best value $B(\eta'(958) \rightarrow \gamma\gamma) = (2.20 \pm 0.08) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041B24
NODE=S041B24

NODE=S041B24;LINKAGE=EP
NODE=S041B24;LINKAGE=W1

$\Gamma(\eta' K^*(892)^+)/\Gamma_{total}$ Γ_{252}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

$4.8^{+1.6}_{-1.4} \pm 0.8$

| | | | |
|---|-----------------|------|------------------------------------|
| 1 | DEL-AMO-SA..10A | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|-----------------|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

$4.9^{+1.9}_{-1.7} \pm 0.8$

| | | | |
|---|--------|-----|-----------------------------------|
| 1 | AUBERT | 07E | BABR Repl. by DEL-AMO-SANCHEZ 10A |
|---|--------|-----|-----------------------------------|

| | | | |
|-------|----|-------------|--|
| < 2.9 | 90 | 1 SCHUEMANN | 07 BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------|----|-------------|--|

| | | | |
|-----|----|------------|------------------------------|
| <14 | 90 | 1 AUBERT,B | 04D BABR Repl. by AUBERT 07E |
|-----|----|------------|------------------------------|

| | | | |
|-----|----|------------|--|
| <35 | 90 | 1 RICHICHI | 00 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----|----|------------|--|

| | | | |
|-----|----|---------|------------------------------|
| <13 | 90 | BEHRENS | 98 CLE2 Repl. by RICHICHI 00 |
|-----|----|---------|------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B20;LINKAGE=EP

 $\Gamma(\eta' K_0^*(1430)^+)/\Gamma_{total}$ Γ_{253}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

$5.2 \pm 1.9 \pm 1.0$

| | | | |
|---|-----------------|------|------------------------------------|
| 1 | DEL-AMO-SA..10A | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|-----------------|------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T63
NODE=S041T63

NODE=S041T63;LINKAGE=EP

 $\Gamma(\eta' K_2^*(1430)^+)/\Gamma_{total}$ Γ_{254}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

$28.0^{+4.6}_{-4.3} \pm 2.6$

| | | | |
|---|-----------------|------|------------------------------------|
| 1 | DEL-AMO-SA..10A | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|-----------------|------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T64
NODE=S041T64

NODE=S041T64;LINKAGE=EP

 $\Gamma(\eta K^+)/\Gamma_{total}$ Γ_{255}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

2.4 ± 0.4 OUR AVERAGE

Error includes scale factor of 1.7.

$2.12 \pm 0.23 \pm 0.11$

| | | | |
|---|-----|----|---|
| 1 | HOI | 12 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|-----|----|---|

$2.94^{+0.39}_{-0.34} \pm 0.21$

| | | | |
|---|--------|------|---|
| 1 | AUBERT | 09AV | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|--------|------|---|

$2.2^{+2.8}_{-2.2}$

| | | | |
|---|----------|----|---|
| 1 | RICHICHI | 00 | CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|----------|----|---|

• • • We do not use the following data for averages, fits, limits, etc. • • •

$2.21^{+0.48}_{-0.42} \pm 0.01$

| | | | |
|-----|-------|----|----------------------|
| 1,2 | WICHT | 08 | BELL Repl. by HOI 12 |
|-----|-------|----|----------------------|

$3.7 \pm 0.4 \pm 0.1$

| | | | |
|---|--------|------|---------------------------|
| 1 | AUBERT | 07AE | BABR Repl. by AUBERT 09AV |
|---|--------|------|---------------------------|

$1.9 \pm 0.3^{+0.2}_{-0.1}$

| | | | |
|---|-------|-----|----------------------|
| 1 | CHANG | 07B | BELL Repl. by HOI 12 |
|---|-------|-----|----------------------|

$3.3 \pm 0.6 \pm 0.3$

| | | | |
|---|----------|-----|---------------------------|
| 1 | AUBERT,B | 05K | BABR Repl. by AUBERT 07AE |
|---|----------|-----|---------------------------|

$2.1 \pm 0.6 \pm 0.2$

| | | | |
|---|-------|-----|-------------------------|
| 1 | CHANG | 05A | BELL Repl. by CHANG 07B |
|---|-------|-----|-------------------------|

$3.4 \pm 0.8 \pm 0.2$

| | | | |
|---|--------|-----|----------------------------|
| 1 | AUBERT | 04H | BABR Repl. by AUBERT,B 05K |
|---|--------|-----|----------------------------|

| | | | |
|-----|----|---------|------------------------------|
| <14 | 90 | BEHRENS | 98 CLE2 Repl. by RICHICHI 00 |
|-----|----|---------|------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² WICHT 08 reports $[\Gamma(B^+ \rightarrow \eta K^+)/\Gamma_{total}] \times [B(\eta \rightarrow 2\gamma)] = (0.87^{+0.16+0.10}_{-0.15-0.07}) \times 10^{-6}$ which we divide by our best value $B(\eta \rightarrow 2\gamma) = (39.41 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041B21
NODE=S041B21

NODE=S041B21;LINKAGE=EP

NODE=S041B21;LINKAGE=WI

 $\Gamma(\eta K^*(892)^+)/\Gamma_{total}$ Γ_{256}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

19.3 ± 1.6 OUR AVERAGE

$19.3^{+2.0}_{-1.9} \pm 1.5$

| | | | |
|---|------|-----|---|
| 1 | WANG | 07B | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|------|-----|---|

$18.9 \pm 1.8 \pm 1.3$

| | | | |
|---|----------|-----|---|
| 1 | AUBERT,B | 06H | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|----------|-----|---|

$26.4^{+9.6}_{-8.2} \pm 3.3$

| | | | |
|---|----------|----|---|
| 1 | RICHICHI | 00 | CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|----------|----|---|

• • • We do not use the following data for averages, fits, limits, etc. • • •

$25.6 \pm 4.0 \pm 2.4$

| | | | |
|---|----------|-----|----------------------------|
| 1 | AUBERT,B | 04D | BABR Repl. by AUBERT,B 06H |
|---|----------|-----|----------------------------|

| | | | |
|-----|----|---------|------------------------------|
| <30 | 90 | BEHRENS | 98 CLE2 Repl. by RICHICHI 00 |
|-----|----|---------|------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B22
NODE=S041B22

NODE=S041B22;LINKAGE=EP

 $\Gamma(\eta K_0^*(1430)^+)/\Gamma_{total}$ Γ_{257}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

$18.2 \pm 2.6 \pm 2.6$

| | | | |
|---|----------|-----|---|
| 1 | AUBERT,B | 06H | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|----------|-----|---|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T16
NODE=S041T16

NODE=S041T16;LINKAGE=EP

$\Gamma(\eta K_2^*(1430)^+)/\Gamma_{total}$ Γ_{258}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----------------------|----------|------------------------------------|
| 9.1±2.7±1.4 | ¹ AUBERT,B | 06H BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T17
NODE=S041T17

NODE=S041T17;LINKAGE=EP

$\Gamma(\eta(1295) K^+ \times B(\eta(1295) \rightarrow \eta\pi\pi))/\Gamma_{total}$ Γ_{259}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--|---------------------|----------|------------------------------------|
| 2.9^{+0.8}_{-0.7}±0.2 | ¹ AUBERT | 08X BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T37
NODE=S041T37

NODE=S041T37;LINKAGE=EP

$\Gamma(\eta(1405) K^+ \times B(\eta(1405) \rightarrow \eta\pi\pi))/\Gamma_{total}$ Γ_{260}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|----------|------------------------------------|
| <1.3 | 90 | ¹ AUBERT | 08X BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T38
NODE=S041T38

NODE=S041T38;LINKAGE=EP

$\Gamma(\eta(1405) K^+ \times B(\eta(1405) \rightarrow K^* K))/\Gamma_{total}$ Γ_{261}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|----------|------------------------------------|
| <1.2 | 90 | ¹ AUBERT | 08X BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T39
NODE=S041T39

NODE=S041T39;LINKAGE=EP

$\Gamma(\eta(1475) K^+ \times B(\eta(1475) \rightarrow K^* K))/\Gamma_{total}$ Γ_{262}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|---|---------------------|----------|------------------------------------|
| 13.8^{+1.8+1.0}_{-1.7-0.6} | ¹ AUBERT | 08X BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T40
NODE=S041T40

NODE=S041T40;LINKAGE=EP

$\Gamma(f_1(1285) K^+)/\Gamma_{total}$ Γ_{263}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|----------|------------------------------------|
| <2.0 | 90 | ¹ AUBERT | 08X BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T41
NODE=S041T41

NODE=S041T41;LINKAGE=EP

$\Gamma(f_1(1420) K^+ \times B(f_1(1420) \rightarrow \eta\pi\pi))/\Gamma_{total}$ Γ_{264}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|----------|------------------------------------|
| <2.9 | 90 | ¹ AUBERT | 08X BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T42
NODE=S041T42

NODE=S041T42;LINKAGE=EP

$\Gamma(f_1(1420) K^+ \times B(f_1(1420) \rightarrow K^* K))/\Gamma_{total}$ Γ_{265}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|----------|------------------------------------|
| <4.1 | 90 | ¹ AUBERT | 08X BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T43
NODE=S041T43

NODE=S041T43;LINKAGE=EP

$\Gamma(\phi(1680) K^+ \times B(\phi(1680) \rightarrow K^* K))/\Gamma_{total}$ Γ_{266}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|----------|------------------------------------|
| <3.4 | 90 | ¹ AUBERT | 08X BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T44
NODE=S041T44

NODE=S041T44;LINKAGE=EP

$\Gamma(f_0(1500) K^+)/\Gamma_{total}$ Γ_{267}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|-----------------------------|-----|-------------|------|---------|
| 3.7± 2.2 OUR AVERAGE | | | | |

[(0.7 ± 0.5) × 10⁻⁶ OUR 2012 AVERAGE]

17 ± 4 ± 12 ¹ LEES 120 BABR $e^+ e^- \rightarrow \Upsilon(4S)$

20 ± 10 ± 27 ² LEES 120 BABR $e^+ e^- \rightarrow \Upsilon(4S)$

3.1⁺₋ 2.2⁺₋ ± 0.2 ^{3,4} AUBERT 08AI BABR $e^+ e^- \rightarrow \Upsilon(4S)$

NODE=S041T03
NODE=S041T03

NEW

OCCUR=2

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-----|----|-------------------------|----------|----------------------|
| <19 | 90 | ^{4,5} AUBERT,B | 05N BABR | Repl. by AUBERT 08AI |
|-----|----|-------------------------|----------|----------------------|

- ¹ Measured in the $B^+ \rightarrow K^+ K^- K^+$ decay.
- ² Measured in the $B^+ \rightarrow K^+ K_S^0 K_S^0$ decay.
- ³ AUBERT 08AI reports $B(B^+ \rightarrow f_0(1500) K^+) \cdot B(f_0(1500) \rightarrow \pi^+ \pi^-) = (0.73 \pm 0.21^{+0.47}_{-0.48}) \times 10^{-6}$. We divide this result by our best value of $B(f_0(1500) \rightarrow \pi\pi) = (34.9 \pm 2.3) \times 10^{-2}$ multiplied by 2/3 to account for the $\pi^+ \pi^-$ fraction. Our first quoted uncertainty is the combined experiment's uncertainty and our second is the systematic uncertainty from using out best value.
- ⁴ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.
- ⁵ AUBERT,B 05N reports $B(B^+ \rightarrow f_0(1500) K^+) \cdot B(f_0(1500) \rightarrow \pi^+ \pi^-) < 4.4 \times 10^{-6}$. We divide this result by our best value of $B(f_0(1500) \rightarrow \pi\pi) = (34.9 \pm 2.3) \times 10^{-2}$ multiplied by 2/3 to account for the $\pi^+ \pi^-$ fraction. Our first quoted uncertainty is the combined experiment's uncertainty and our second is the systematic uncertainty from using out best value.

NODE=S041T03;LINKAGE=LA
 NODE=S041T03;LINKAGE=LB
 NODE=S041T03;LINKAGE=AU

NODE=S041T03;LINKAGE=EP
 NODE=S041T03;LINKAGE=AB

$\Gamma(\omega K^+)/\Gamma_{\text{total}}$

Γ_{268}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-------|-------------------------------|-----------|------------------------------------|
| 6.7±0.8 OUR AVERAGE | Error | includes scale factor of 1.8. | | |
| 6.3±0.5±0.3 | | ¹ AUBERT | 07AE BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 8.1±0.6±0.6 | | ¹ JEN | 06 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 3.2 ^{+2.4} _{-1.9} ±0.8 | | ¹ JESSOP | 00 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B25
 NODE=S041B25

- • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|--|----|-----------------------|----------|------------------------------------|
| 6.1±0.6±0.4 | | ¹ AUBERT,B | 06E BABR | AUBERT 07AE |
| 4.8±0.8±0.4 | | ¹ AUBERT | 04H BABR | Repl. by AUBERT,B 06E |
| 6.5 ^{+1.3} _{-1.2} ±0.6 | | ¹ WANG | 04A BELL | Repl. by JEN 06 |
| 9.2 ^{+2.6} _{-2.3} ±1.0 | | ¹ LU | 02 BELL | Repl. by WANG 04A |
| <4 | 90 | ¹ AUBERT | 01G BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 1.5 ⁺⁷ ₋₆ ±2 | | ¹ BERGFELD | 98 CLE2 | Repl. by JESSOP 00 |

- ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B25;LINKAGE=EP

$\Gamma(\omega K^*(892)^+)/\Gamma_{\text{total}}$

Γ_{269}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-----------------------|----------|------------------------------------|
| < 7.4 | 90 | ¹ AUBERT | 09H BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 3.4 | 90 | ¹ AUBERT,B | 06T BABR | Repl. by AUBERT 09H |
| < 7.4 | 90 | ¹ AUBERT | 05O BABR | Repl. by AUBERT,B 06T |
| <87 | 90 | ¹ BERGFELD | 98 CLE2 | |

- ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B26
 NODE=S041B26

NODE=S041B26;LINKAGE=EP

$\Gamma(\omega (K\pi)_0^{*+})/\Gamma_{\text{total}}$

Γ_{270}/Γ

$(K\pi)_0^{*+}$ is the total S-wave composed of $K_0^*(1430)$ and nonresonant that are described using LASS shape.

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|---------------------|----------|------------------------------------|
| 27.5±3.0±2.6 | ¹ AUBERT | 09H BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

- ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T51

NODE=S041T51

NODE=S041T51

NODE=S041T51;LINKAGE=EP

$\Gamma(\omega K_0^*(1430)^+)/\Gamma_{\text{total}}$

Γ_{271}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|---------------------|----------|------------------------------------|
| 24.0±2.6±4.4 | ¹ AUBERT | 09H BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

- ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T52

NODE=S041T52

NODE=S041T52;LINKAGE=EP

$\Gamma(\omega K_2^*(1430)^+)/\Gamma_{\text{total}}$

Γ_{272}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|---------------------|----------|------------------------------------|
| 21.5±3.6±2.4 | ¹ AUBERT | 09H BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

- ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T53

NODE=S041T53

NODE=S041T53;LINKAGE=EP

$\Gamma(a_0(980)^0 K^+ \times B(a_0(980)^0 \rightarrow \eta\pi^0))/\Gamma_{\text{total}}$

Γ_{274}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|------------------------|---------|------------------------------------|
| <2.5 | 90 | ¹ AUBERT,BE | 04 BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

- ¹ Assumes equal production of charged and neutral B mesons from $\Upsilon(4S)$ decays.

NODE=S041RA5

NODE=S041RA5

NODE=S041RA5;LINKAGE=EP

$$\Gamma(a_0(980)^+ K^0 \times B(a_0(980)^+ \rightarrow \eta \pi^+)) / \Gamma_{\text{total}} \quad \Gamma_{273} / \Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|------------------------|------|---|
| <3.9 | 90 | ¹ AUBERT,BE | 04 | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of charged and neutral B mesons from $\Upsilon(4S)$ decays.

NODE=S041RA6
NODE=S041RA6

NODE=S041RA6;LINKAGE=EP

$$\Gamma(K^*(892)^0 \pi^+) / \Gamma_{\text{total}} \quad \Gamma_{275} / \Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|-------------------------------|-----|-------------|------|---------|
| 10.1 ± 0.9 OUR AVERAGE | | | | |

10.8 ± 0.6 $^{+1.2}_{-1.4}$ ¹ AUBERT 08AI BABR $e^+ e^- \rightarrow \Upsilon(4S)$

9.67 ± 0.64 $^{+0.81}_{-0.89}$ ¹ GARMASH 06 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

13.5 ± 1.2 $^{+0.8}_{-0.9}$ ¹ AUBERT,B 05N BABR Repl. by AUBERT 08AI

9.8 ± 0.9 $^{+1.1}_{-1.2}$ ¹ GARMASH 05 BELL Repl. by GARMASH 06

15.5 ± 1.8 $^{+1.5}_{-4.0}$ ^{1,2} AUBERT,B 04P BABR Repl. by AUBERT,B 05N

19.4 $^{+4.2}_{-3.9}$ $^{+4.1}_{-7.1}$ ³ GARMASH 02 BELL Repl. by GARMASH 05

<119 90 ⁴ ABE 00C SLD $e^+ e^- \rightarrow Z$

< 16 90 ¹ JESSOP 00 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$

<390 90 ⁵ ADAM 96D DLPH $e^+ e^- \rightarrow Z$

< 41 90 ASNER 96 CLE2 Repl. by JESSOP 00

<480 90 ⁵ ABREU 95N DLPH Sup. by ADAM 96D

<170 90 ALBRECHT 91B ARG $e^+ e^- \rightarrow \Upsilon(4S)$

<150 90 ⁶ AVERY 89B CLEO $e^+ e^- \rightarrow \Upsilon(4S)$

<260 90 AVERY 87 CLEO $e^+ e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² AUBERT 04P also report a branching ratio for $B^+ \rightarrow$ "higher K^* resonances" π^+ , $K^* \rightarrow K^+ \pi^-$, $(25.1 \pm 2.0^{+11.0}_{-5.7}) \times 10^{-6}$.

³ Uses a reference decay mode $B^+ \rightarrow \bar{D}^0 \pi^+$ and $\bar{D}^0 \rightarrow K^+ \pi^-$ with $B(B^+ \rightarrow \bar{D}^0 \pi^+) \cdot B(\bar{D}^0 \rightarrow K^+ \pi^-) = (20.3 \pm 2.0) \times 10^{-5}$.

⁴ ABE 00C assumes $B(Z \rightarrow b\bar{b}) = (21.7 \pm 0.1)\%$ and the B fractions $f_{B^0} = f_{B^+} = (39.7^{+1.8}_{-2.2})\%$ and $f_{B_s} = (10.5^{+1.8}_{-2.2})\%$.

⁵ Assumes a B^0 , B^- production fraction of 0.39 and a B_s production fraction of 0.12.

⁶ AVERY 89B reports $< 1.3 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \bar{B}^0$. We rescale to 50%.

NODE=S041R6;LINKAGE=EP
NODE=S041R6;LINKAGE=AB

NODE=S041R6;LINKAGE=GM

NODE=S041R6;LINKAGE=KQ

NODE=S041R6;LINKAGE=SR
NODE=S041R6;LINKAGE=A1

$$\Gamma(K^*(892)^+ \pi^0) / \Gamma_{\text{total}} \quad \Gamma_{276} / \Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------------|------|---|
| 8.2 ± 1.5 ± 1.1 | | ¹ LEES | 11I | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

6.9 ± 2.0 ± 1.3 ¹ AUBERT 05X BABR Repl. by LEES 11I

<31 90 ¹ JESSOP 00 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$

<99 90 ASNER 96 CLE2 Repl. by JESSOP 00

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R99
NODE=S041R99

NODE=S041R99;LINKAGE=EP

$$\Gamma(K^+ \pi^- \pi^+) / \Gamma_{\text{total}} \quad \Gamma_{277} / \Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|-------------------------------|-----|-------------|------|---------|
| 51.0 ± 2.9 OUR AVERAGE | | | | |

54.4 ± 1.1 ± 4.6 ¹ AUBERT 08AI BABR $e^+ e^- \rightarrow \Upsilon(4S)$

48.8 ± 1.1 ± 3.6 ¹ GARMASH 06 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

64.1 ± 2.4 ± 4.0 ¹ AUBERT,B 05N BABR Repl. by AUBERT 08AI

46.6 ± 2.1 ± 4.3 ¹ GARMASH 05 BELL Repl. by GARMASH 06

53.6 ± 3.1 ± 5.1 ¹ GARMASH 04 BELL Repl. by GARMASH 05

59.1 ± 3.8 ± 3.2 ² AUBERT 03M BABR Repl. by AUBERT,B 05N

55.6 ± 5.8 ± 7.7 ³ GARMASH 02 BELL Repl. by GARMASH 04

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Assumes equal production of B^0 and B^+ at the $\Upsilon(4S)$; charm and charmonium contributions are subtracted, otherwise no assumptions about intermediate resonances.

³ Uses a reference decay mode $B^+ \rightarrow \bar{D}^0 \pi^+$ and $\bar{D}^0 \rightarrow K^+ \pi^-$ with $B(B^+ \rightarrow \bar{D}^0 \pi^+) \cdot B(\bar{D}^0 \rightarrow K^+ \pi^-) = (20.3 \pm 2.0) \times 10^{-5}$.

NODE=S041B60
NODE=S041B60

NODE=S041B60;LINKAGE=EP
NODE=S041B60;LINKAGE=TM

NODE=S041B60;LINKAGE=GM

$\Gamma(K^+ \pi^- \pi^+ \text{nonresonant})/\Gamma_{\text{total}}$ Γ_{278}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

NODE=S041R32
 NODE=S041R32

16.3^{+2.1}_{-1.5} OUR AVERAGE

| | | | | |
|------------------------------|--|------------|-----------|------------------------------------|
| $9.3 \pm 1.0^{+6.9}_{-1.7}$ | | 1,2 AUBERT | 08AI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $16.9 \pm 1.3^{+1.7}_{-1.6}$ | | 1 GARMASH | 06 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-------------------------------|----|------------|----------|------------------------------------|
| $2.9 \pm 0.6^{+0.8}_{-0.5}$ | | 1 AUBERT,B | 05N BABR | Repl. by AUBERT 08AI |
| $17.3 \pm 1.7^{+17.2}_{-8.0}$ | | 1 GARMASH | 05 BELL | Repl. by GARMASH 06 |
| < 17 | 90 | 1 AUBERT,B | 04P BABR | Repl. by AUBERT,B 05N |
| < 330 | 90 | 3 ADAM | 96D DLPH | $e^+ e^- \rightarrow Z$ |
| < 28 | 90 | BERGFELD | 96B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 400 | 90 | 3 ABREU | 95N DLPH | Sup. by ADAM 96D |
| < 330 | 90 | ALBRECHT | 91E ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 190 | 90 | 4 AVERY | 89B CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Calculate the total nonresonant contribution by combining the S-wave composed of $K_0^*(1430)$ and nonresonant that are described using LASS shape.

³ Assumes a B^0 , B^- production fraction of 0.39 and a B_s production fraction of 0.12.

⁴ AVERY 89B reports $< 1.7 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \bar{B}^0$. We rescale to 50%.

NODE=S041R32;LINKAGE=EP
 NODE=S041R32;LINKAGE=UB

NODE=S041R32;LINKAGE=SR
 NODE=S041R32;LINKAGE=A1

 $\Gamma(\omega(782) K^+)/\Gamma_{\text{total}}$ Γ_{279}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

NODE=S041T34
 NODE=S041T34

| | | | |
|--|------------|-----------|------------------------------------|
| 5.9^{+8.8+0.5}_{-9.0-0.4} | 1,2 AUBERT | 08AI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--|------------|-----------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² AUBERT 08AI reports $[\Gamma(B^+ \rightarrow \omega(782) K^+)/\Gamma_{\text{total}}] \times [B(\omega(782) \rightarrow \pi^+ \pi^-)] = (0.09 \pm 0.13^{+0.036}_{-0.045}) \times 10^{-6}$ which we divide by our best value $B(\omega(782) \rightarrow \pi^+ \pi^-) = (1.53^{+0.11}_{-0.13}) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041T34;LINKAGE=EP
 NODE=S041T34;LINKAGE=UB

 $\Gamma(K^+ f_0(980) \times B(f_0(980) \rightarrow \pi^+ \pi^-))/\Gamma_{\text{total}}$ Γ_{280}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

NODE=S041B59
 NODE=S041B59

9.4^{+1.0}_{-1.2} OUR AVERAGE

| | | | | |
|---------------------------------|--|-----------|-----------|------------------------------------|
| $10.3 \pm 0.5^{+2.0}_{-1.4}$ | | 1 AUBERT | 08AI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $8.78 \pm 0.82^{+0.85}_{-1.76}$ | | 1 GARMASH | 06 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-----------------------------------|----|------------|----------|------------------------------------|
| $9.47 \pm 0.97^{+0.62}_{-0.88}$ | | 1 AUBERT,B | 05N BABR | Repl. by AUBERT 08AI |
| $7.55 \pm 1.24^{+1.63}_{-1.18}$ | | 1 GARMASH | 05 BELL | Repl. by GARMASH 06 |
| $9.2 \pm 1.2^{+2.1}_{-2.6}$ | | 2 AUBERT,B | 04P BABR | Repl. by AUBERT,B 05N |
| $9.6^{+2.5}_{-2.3}^{+3.7}_{-1.7}$ | | 3 GARMASH | 02 BELL | Repl. by GARMASH 05 |
| < 80 | 90 | 4 AVERY | 89B CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² AUBERT,B 04P also reports $B(B^+ \rightarrow \text{"higher } f^0 \text{ resonances"} \pi^+, f(980)^0 \rightarrow \pi^+ \pi^-) = (3.2 \pm 1.2^{+6.0}_{-2.9}) \times 10^{-6}$.

³ Uses a reference decay mode $B^+ \rightarrow \bar{D}^0 \pi^+$ and $\bar{D}^0 \rightarrow K^+ \pi^-$ with $B(B^+ \rightarrow \bar{D}^0 \pi^+) \times B(\bar{D}^0 \rightarrow K^+ \pi^-) = (20.3 \pm 2.0) \times 10^{-5}$. Only charged pions from the $f_0(980)$ are used.

⁴ AVERY 89B reports $< 7 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \bar{B}^0$. We rescale to 50%.

NODE=S041B59;LINKAGE=EP
 NODE=S041B59;LINKAGE=AU

NODE=S041B59;LINKAGE=GM

NODE=S041B59;LINKAGE=A1

$\Gamma(f_2(1270)^0 K^+)/\Gamma_{\text{total}}$ Γ_{281}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|----------------------------------|-----|-------------|-----------|------------------------------------|
| 1.07 ± 0.27 OUR AVERAGE | | | | |
| $0.88^{+0.38+0.01}_{-0.33-0.03}$ | | 1,2 AUBERT | 08AI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $1.33 \pm 0.30^{+0.23}_{-0.34}$ | | 1 GARMASH | 06 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041T00
 NODE=S041T00

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-------|----|------------|----------|----------------------|
| < 16 | 90 | 3 AUBERT,B | 05N BABR | Repl. by AUBERT 08AI |
| < 2.3 | 90 | 4 GARMASH | 05 BELL | Repl. by GARMASH 06 |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² AUBERT 08AI reports $(0.50 \pm 0.15^{+0.15}_{-0.11}) \times 10^{-6}$ for $B(B^+ \rightarrow f_2(1270) K^+) \times B(f_2 \rightarrow \pi^+ \pi^-)$. We compute $B(B^+ \rightarrow f_2(1270) K^+)$ using the PDG value $B(f_2(1270) \rightarrow \pi \pi) = (84.8^{+2.4}_{-1.2}) \times 10^{-2}$ and 2/3 for the $\pi^+ \pi^-$ fraction. Our first error is their experiment's error and the second error is systematic error from using our best value.

³ AUBERT,B 05N reports 8.9×10^{-6} at 90% CL for $B(B^+ \rightarrow f_2(1270) K^+) \times B(f_2(1270) \rightarrow \pi^+ \pi^-)$. We rescaled it using the PDG value $B(f_2(1270) \rightarrow \pi \pi) = 84.7\%$ and 2/3 for the $\pi^+ \pi^-$ fraction.

⁴ GARMASH 05 reports 1.3×10^{-6} at 90% CL for $B(B^+ \rightarrow f_2(1270) K^+) \times B(f_2(1270) \rightarrow \pi^+ \pi^-)$. We rescaled it using the PDG value $B(f_2(1270) \rightarrow \pi \pi) = 84.7\%$ and 2/3 for the $\pi^+ \pi^-$ fraction.

NODE=S041T00;LINKAGE=EP
 NODE=S041T00;LINKAGE=UB

NODE=S041T00;LINKAGE=AT

NODE=S041T00;LINKAGE=GA

 $\Gamma(f_0(1370)^0 K^+ \times B(f_0(1370)^0 \rightarrow \pi^+ \pi^-))/\Gamma_{\text{total}}$ Γ_{282}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|------------------------------------|-----|-------------|----------|------------------------------------|
| < 10.7 × 10⁻⁶ | | | | |
| | 90 | 1 AUBERT,B | 05N BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T01
 NODE=S041T01

NODE=S041T01;LINKAGE=EP

 $\Gamma(\rho^0(1450) K^+ \times B(\rho^0(1450) \rightarrow \pi^+ \pi^-))/\Gamma_{\text{total}}$ Γ_{283}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|------------------------------------|-----|-------------|----------|------------------------------------|
| < 11.7 × 10⁻⁶ | | | | |
| | 90 | 1 AUBERT,B | 05N BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T02
 NODE=S041T02

NODE=S041T02;LINKAGE=EP

 $\Gamma(f'_2(1525) K^+ \times B(f'_2(1525) \rightarrow \pi^+ \pi^-))/\Gamma_{\text{total}}$ Γ_{284}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-----------------------------------|-----|-------------|----------|------------------------------------|
| < 3.4 × 10⁻⁶ | | | | |
| | 90 | 1 AUBERT,B | 05N BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T04
 NODE=S041T04

NODE=S041T04;LINKAGE=EP

 $\Gamma(K^+ \rho^0)/\Gamma_{\text{total}}$ Γ_{285}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-----|-------------|------|---------|
| 3.7 ± 0.5 OUR AVERAGE | | | | |

$3.56 \pm 0.45^{+0.57}_{-0.46}$ ¹ AUBERT 08AI BABR $e^+ e^- \rightarrow \Upsilon(4S)$

$3.89 \pm 0.47^{+0.43}_{-0.41}$ ¹ GARMASH 06 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|---------------------------------|--|------------|----------|----------------------|
| $5.07 \pm 0.75^{+0.55}_{-0.88}$ | | 1 AUBERT,B | 05N BABR | Repl. by AUBERT 08AI |
|---------------------------------|--|------------|----------|----------------------|

| | | | | |
|---------------------------------|--|-----------|---------|---------------------|
| $4.78 \pm 0.75^{+1.01}_{-0.97}$ | | 1 GARMASH | 05 BELL | Repl. by GARMASH 06 |
|---------------------------------|--|-----------|---------|---------------------|

| | | | | |
|-------|----|------------|----------|-----------------------|
| < 6.2 | 90 | 2 AUBERT,B | 04P BABR | Repl. by AUBERT,B 05N |
|-------|----|------------|----------|-----------------------|

| | | | | |
|------|----|-----------|---------|------------------------------------|
| < 12 | 90 | 3 GARMASH | 02 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------|----|-----------|---------|------------------------------------|

| | | | | |
|------|----|-------|---------|-------------------------|
| < 86 | 90 | 4 ABE | 00C SLD | $e^+ e^- \rightarrow Z$ |
|------|----|-------|---------|-------------------------|

| | | | | |
|------|----|----------|---------|------------------------------------|
| < 17 | 90 | 1 JESSOP | 00 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------|----|----------|---------|------------------------------------|

| | | | | |
|-------|----|--------|----------|-------------------------|
| < 120 | 90 | 5 ADAM | 96D DLPH | $e^+ e^- \rightarrow Z$ |
|-------|----|--------|----------|-------------------------|

| | | | | |
|------|----|-------|---------|--------------------|
| < 19 | 90 | ASNER | 96 CLE2 | Repl. by JESSOP 00 |
|------|----|-------|---------|--------------------|

| | | | | |
|-------|----|---------|----------|------------------|
| < 190 | 90 | 5 ABREU | 95N DLPH | Sup. by ADAM 96D |
|-------|----|---------|----------|------------------|

| | | | | |
|-------|----|----------|---------|------------------------------------|
| < 180 | 90 | ALBRECHT | 91B ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------|----|----------|---------|------------------------------------|

| | | | | |
|------|----|---------|----------|------------------------------------|
| < 80 | 90 | 6 AVERY | 89B CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------|----|---------|----------|------------------------------------|

| | | | | |
|-------|----|-------|---------|------------------------------------|
| < 260 | 90 | AVERY | 87 CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------|----|-------|---------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² AUBERT 04P reports a central value of $(3.9 \pm 1.2^{+1.3}_{-3.5}) \times 10^{-6}$ for this branching ratio.

³ Uses a reference decay mode $B^+ \rightarrow \bar{D}^0 \pi^+$ and $\bar{D}^0 \rightarrow K^+ \pi^-$ with $B(B^+ \rightarrow \bar{D}^0 \pi^+) \cdot B(\bar{D}^0 \rightarrow K^+ \pi^-) = (20.3 \pm 2.0) \times 10^{-5}$.

⁴ ABE 00C assumes $B(Z \rightarrow b\bar{b}) = (21.7 \pm 0.1)\%$ and the B fractions $f_{B^0} = f_{B^+} = (39.7^{+1.8}_{-2.2})\%$ and $f_{B_s} = (10.5^{+1.8}_{-2.2})\%$.

⁵ Assumes production fractions $f_{B^0} = f_{B^-} = 0.39$ and $f_{B_s} = 0.12$.

⁶ AVERY 89B reports $< 7 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \bar{B}^0$. We rescale to 50%.

NODE=S041R7;LINKAGE=EP
 NODE=S041R7;LINKAGE=AU
 NODE=S041R7;LINKAGE=GM

NODE=S041R7;LINKAGE=KQ

NODE=S041R7;LINKAGE=DQ
 NODE=S041R7;LINKAGE=A1

$\Gamma(K_0^*(1430)^0 \pi^+)/\Gamma_{\text{total}}$ Γ_{286}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

NODE=S041S08
 NODE=S041S08

45 $\frac{+9}{-7}$ OUR AVERAGE Error includes scale factor of 1.5.

| | | | | |
|-----------------------------------|---------------------|------|------|------------------------------------|
| $32.0 \pm 1.2 \frac{+10.8}{-6.0}$ | ¹ AUBERT | 08AI | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------------------|---------------------|------|------|------------------------------------|

| | | | | |
|----------------------------------|----------------------|----|------|------------------------------------|
| $51.6 \pm 1.7 \frac{+7.0}{-7.5}$ | ¹ GARMASH | 06 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|----------------------------------|----------------------|----|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|------------------------|-------------------------|-----|------|----------------------|
| $44.4 \pm 2.2 \pm 5.3$ | ^{1,2} AUBERT,B | 05N | BABR | Repl. by AUBERT 08AI |
|------------------------|-------------------------|-----|------|----------------------|

| | | | | |
|------------------------------------|----------------------|----|------|---------------------|
| $45.0 \pm 2.9 \frac{+15.0}{-10.7}$ | ¹ GARMASH | 05 | BELL | Repl. by GARMASH 06 |
|------------------------------------|----------------------|----|------|---------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² See erratum: AUBERT,BE 06A.

NODE=S041S08;LINKAGE=EP
 NODE=S041S08;LINKAGE=ER

 $\Gamma(K_2^*(1430)^0 \pi^+)/\Gamma_{\text{total}}$ Γ_{287}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

NODE=S041R72
 NODE=S041R72

| | | | | |
|---|-----------------------|------|------|------------------------------------|
| $5.6 \frac{+2.2}{-1.5} \pm 0.1$ | ^{1,2} AUBERT | 08AI | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|-----------------------|------|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | | |
|------|----|-----------------------|-----|------|----------------------|
| < 23 | 90 | ³ AUBERT,B | 05N | BABR | Repl. by AUBERT 08AI |
|------|----|-----------------------|-----|------|----------------------|

| | | | | | |
|-------|----|----------------------|----|------|------------------------------------|
| < 6.9 | 90 | ⁴ GARMASH | 05 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------|----|----------------------|----|------|------------------------------------|

| | | | | | |
|-------|----|----------|-----|-----|------------------------------------|
| < 680 | 90 | ALBRECHT | 91B | ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------|----|----------|-----|-----|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² AUBERT 08AI reports $(1.85 \pm 0.41 \frac{+0.61}{-0.29}) \times 10^{-6}$ for $B(B^+ \rightarrow K_2^*(1430)^0 \pi^+) \times B(K_2^*(1430)^0 \rightarrow K^+ \pi^-)$. We compute $B(B^+ \rightarrow K_2^*(1430)^0 \pi^+)$ using the PDG value $B(K_2^*(1430)^0 \rightarrow K \pi) = (49.9 \pm 1.2) \times 10^{-2}$ and 2/3 for the $K^+ \pi^-$ fraction. Our first error is their experiment's error and the second error is systematic error from using our best value.

NODE=S041R72;LINKAGE=EP
 NODE=S041R72;LINKAGE=UB

³ AUBERT,B 05N reports 7.7×10^{-6} at 90% CL for $B(B^+ \rightarrow K_2^*(1430)^0 \pi^+) \times B(K_2^*(1430)^0 \rightarrow K^+ \pi^-)$. We rescaled it using the PDG value $B(K_2^*(1430)^0 \rightarrow K \pi) = 49.9\%$ and 2/3 for the $K^+ \pi^-$ fraction.

NODE=S041R72;LINKAGE=AT

⁴ GARMASH 05 reports 2.3×10^{-6} at 90% CL for $B(B^+ \rightarrow K_2^*(1430)^0 \pi^+) \times B(K_2^*(1430)^0 \rightarrow K^+ \pi^-)$. We rescaled it using the PDG value $B(K_2^*(1430)^0 \rightarrow K \pi) = 49.9\%$ and 2/3 for the $K^+ \pi^-$ mode.

NODE=S041R72;LINKAGE=GA

 $\Gamma(K^*(1410)^0 \pi^+)/\Gamma_{\text{total}}$ Γ_{288}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

NODE=S041Q64
 NODE=S041Q64

| | | | | | |
|----------------|----|----------------------|----|------|------------------------------------|
| < 45 | 90 | ¹ GARMASH | 05 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|----------------|----|----------------------|----|------|------------------------------------|

¹ GARMASH 05 reports 2.0×10^{-6} at 90% CL for $B(B^+ \rightarrow K^*(1410)^0 \pi^+) \times B(K^*(1410)^0 \rightarrow K^+ \pi^-)$. We rescaled it using the PDG value $B(K^*(1410)^0 \rightarrow K \pi) = 6.6\%$ and 2/3 for the $K^+ \pi^-$ mode.

NODE=S041Q64;LINKAGE=GA

 $\Gamma(K^*(1680)^0 \pi^+)/\Gamma_{\text{total}}$ Γ_{289}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

NODE=S041S09
 NODE=S041S09

| | | | | | |
|----------------|----|----------------------|----|------|------------------------------------|
| < 12 | 90 | ¹ GARMASH | 05 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|----------------|----|----------------------|----|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | | |
|------|----|-----------------------|-----|------|------------------------------------|
| < 15 | 90 | ² AUBERT,B | 05N | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------|----|-----------------------|-----|------|------------------------------------|

¹ GARMASH 05 reports 3.1×10^{-6} at 90% CL for $B(B^+ \rightarrow K^*(1680)^0 \pi^+) \times B(K^*(1680)^0 \rightarrow K^+ \pi^-)$. We rescaled it using the PDG value $B(K^*(1680)^0 \rightarrow K \pi) = 38.7\%$ and 2/3 for the $K^+ \pi^-$ mode.

NODE=S041S09;LINKAGE=GA

² AUBERT,B 05N reports 3.8×10^{-6} at 90% CL for $B(B^+ \rightarrow K^*(1680)^0 \pi^+) \times B(K^*(1680)^0 \rightarrow K^+ \pi^-)$. We rescaled it using the PDG value $B(K^*(1680)^0 \rightarrow K \pi) = 38.7\%$ and 2/3 for the $K^+ \pi^-$ fraction.

NODE=S041S09;LINKAGE=AT

 $\Gamma(K^+ \pi^0 \pi^0)/\Gamma_{\text{total}}$ Γ_{290}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

NODE=S041T74
 NODE=S041T74

| | | | | |
|--|-------------------|-----|------|------------------------------------|
| $16.2 \pm 1.2 \pm 1.5$ | ¹ LEES | 11I | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--|-------------------|-----|------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T74;LINKAGE=EP

 $\Gamma(f_0(980) K^+ \times B(f_0 \rightarrow \pi^0 \pi^0))/\Gamma_{\text{total}}$ Γ_{291}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

NODE=S041T75
 NODE=S041T75

| | | | | |
|---|-------------------|-----|------|------------------------------------|
| $2.8 \pm 0.6 \pm 0.5$ | ¹ LEES | 11I | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|-------------------|-----|------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T75;LINKAGE=EP

$\Gamma(K^- \pi^+ \pi^+)/\Gamma_{\text{total}}$ Γ_{292}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|----------------------|-----------|------------------------------------|
| <0.95 | 90 | ¹ AUBERT | 08BE BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| <4.5 | 90 | ¹ GARMASH | 04 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| <1.8 | 90 | ² AUBERT | 03M BABR | Repl. by AUBERT 08BE |
| <7.0 | 90 | ³ GARMASH | 02 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² Assumes equal production of B^0 and B^+ at the $\Upsilon(4S)$; charm and charmonium contributions are subtracted, otherwise no assumptions about intermediate resonances.³ Uses a reference decay mode $B^+ \rightarrow \bar{D}^0 \pi^+$ and $\bar{D}^0 \rightarrow K^+ \pi^-$ with $B(B^+ \rightarrow \bar{D}^0 \pi^+) \cdot B(\bar{D}^0 \rightarrow K^+ \pi^-) = (20.3 \pm 2.0) \times 10^{-5}$.NODE=S041B61
NODE=S041B61NODE=S041B61;LINKAGE=EP
NODE=S041B61;LINKAGE=TM

NODE=S041B61;LINKAGE=GM

 $\Gamma(K^- \pi^+ \pi^+ \text{nonresonant})/\Gamma_{\text{total}}$ Γ_{293}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|----------|------------------------------------|
| <56 | 90 | BERGFELD | 96B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B3
NODE=S041B3 $\Gamma(K_1(1270)^0 \pi^+)/\Gamma_{\text{total}}$ Γ_{294}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|---------------------|----------|------------------------------------|
| <4.0 $\times 10^{-5}$ | 90 | ¹ AUBERT | 10D BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041T62
NODE=S041T62

NODE=S041T62;LINKAGE=EP

 $\Gamma(K_1(1400)^0 \pi^+)/\Gamma_{\text{total}}$ Γ_{295}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|---------------------|----------|------------------------------------|
| <3.9 $\times 10^{-5}$ | 90 | ¹ AUBERT | 10D BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| <2.6 $\times 10^{-3}$ | 90 | ALBRECHT | 91B ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041R71
NODE=S041R71

NODE=S041R71;LINKAGE=EP

 $\Gamma(K^0 \pi^+ \pi^0)/\Gamma_{\text{total}}$ Γ_{296}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|----------------------|---------|------------------------------------|
| <66 $\times 10^{-6}$ | 90 | ¹ ECKHART | 02 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041B82
NODE=S041B82

NODE=S041B82;LINKAGE=EP

 $\Gamma(K^0 \rho^+)/\Gamma_{\text{total}}$ Γ_{297}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|-------------|----------|------------------------------------|
| 8.0^{+1.4}_{-1.3} ± 0.6 | | AUBERT | 07Z BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-----|----|-------|---------|------------------------------------|
| <48 | 90 | ASNER | 96 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----|----|-------|---------|------------------------------------|

NODE=S041R98
NODE=S041R98 $\Gamma(K^*(892)^+ \pi^+ \pi^-)/\Gamma_{\text{total}}$ Γ_{298}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|-----------------------|----------|------------------------------------|
| 75.3 $\pm 6.0 \pm 8.1$ | | ¹ AUBERT,B | 06U BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-------|----|----------|---------|------------------------------------|
| <1100 | 90 | ALBRECHT | 91E ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------|----|----------|---------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041R83
NODE=S041R83

NODE=S041R83;LINKAGE=EP

 $\Gamma(K^*(892)^+ \rho^0)/\Gamma_{\text{total}}$ Γ_{299}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|------------------------------|------|------------------------------------|
| 4.6 $\pm 1.0 \pm 0.4$ | | ¹ DEL-AMO-SA..11D | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-------|----|-----------------------|----------|------------------------------|
| < 6.1 | 90 | ¹ AUBERT,B | 06G BABR | Repl. by DEL-AMO-SANCHEZ 11D |
|-------|----|-----------------------|----------|------------------------------|

| | | | | |
|--|--|---------------------|----------|-----------------------|
| 10.6 ^{+3.0} _{-2.6} ± 2.4 | | ¹ AUBERT | 03V BABR | Repl. by AUBERT,B 06G |
|--|--|---------------------|----------|-----------------------|

| | | | | |
|------|----|---------------------|---------|------------------------------------|
| < 74 | 90 | ² GODANG | 02 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------|----|---------------------|---------|------------------------------------|

| | | | | |
|------|----|----------|---------|------------------------------------|
| <900 | 90 | ALBRECHT | 91B ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------|----|----------|---------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² Assumes a helicity 00 configuration. For a helicity 11 configuration, the limit decreases to 4.9×10^{-5} .NODE=S041R73
NODE=S041R73NODE=S041R73;LINKAGE=EP
NODE=S041R73;LINKAGE=Z1

$\Gamma(K^*(892)^+ f_0(980))/\Gamma_{\text{total}}$ Γ_{300}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

| | | | |
|--------------------|------------------------------|------|------------------------------------|
| 4.2±0.6±0.3 | ¹ DEL-AMO-SA..11D | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------|------------------------------|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|-------------|-----------------------|-----|-----------------------------------|
| 5.2±1.2±0.5 | ¹ AUBERT,B | 06G | BABR Repl. by DEL-AMO-SANCHEZ 11D |
|-------------|-----------------------|-----|-----------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041T15
NODE=S041T15

NODE=S041T15;LINKAGE=EP

 $\Gamma(a_1^+ K^0)/\Gamma_{\text{total}}$ Γ_{301}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

| | | | |
|---------------------|-----------------------|-----|---|
| 34.9±5.0±4.4 | ^{1,2} AUBERT | 08F | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---------------------|-----------------------|-----|---|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² Assumes a_1^\pm decays only to 3π and $B(a_1^\pm \rightarrow \pi^\pm \pi^\mp \pi^\pm) = 0.5$.NODE=S041T23
NODE=S041T23

NODE=S041T23;LINKAGE=EP

NODE=S041T23;LINKAGE=UB

 $\Gamma(b_1^+ K^0 \times B(b_1^+ \rightarrow \omega \pi^+))/\Gamma_{\text{total}}$ Γ_{302}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

| | | | |
|--------------------|---------------------|------|---|
| 9.6±1.7±0.9 | ¹ AUBERT | 08AG | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------|---------------------|------|---|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041T36
NODE=S041T36

NODE=S041T36;LINKAGE=EP

 $\Gamma(K^*(892)^0 \rho^+)/\Gamma_{\text{total}}$ Γ_{303}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

9.2±1.5 OUR AVERAGE

| | | | |
|-------------|-----------------------|-----|---|
| 9.6±1.7±1.5 | ¹ AUBERT,B | 06G | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------------|-----------------------|-----|---|

| | | | |
|-------------|--------------------|-----|---|
| 8.9±1.7±1.2 | ¹ ZHANG | 05D | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------------|--------------------|-----|---|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041S07
NODE=S041S07

NODE=S041S07;LINKAGE=EP

 $\Gamma(K_1(1400)^+ \rho^0)/\Gamma_{\text{total}}$ Γ_{304}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

| | | | | |
|----------------------------------|----|----------|-----|--|
| <7.8 × 10⁻⁴ | 90 | ALBRECHT | 91B | ARG $e^+ e^- \rightarrow \Upsilon(4S)$ |
|----------------------------------|----|----------|-----|--|

NODE=S041R74
NODE=S041R74 $\Gamma(K_2^*(1430)^+ \rho^0)/\Gamma_{\text{total}}$ Γ_{305}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

| | | | | |
|----------------------------------|----|----------|-----|--|
| <1.5 × 10⁻³ | 90 | ALBRECHT | 91B | ARG $e^+ e^- \rightarrow \Upsilon(4S)$ |
|----------------------------------|----|----------|-----|--|

NODE=S041R75
NODE=S041R75 $\Gamma(b_1^0 K^+ \times B(b_1^0 \rightarrow \omega \pi^0))/\Gamma_{\text{total}}$ Γ_{306}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

| | | | |
|--------------------|---------------------|------|---|
| 9.1±1.7±1.0 | ¹ AUBERT | 07BI | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------|---------------------|------|---|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041T26
NODE=S041T26

NODE=S041T26;LINKAGE=EP

 $\Gamma(b_1^+ K^{*0} \times B(b_1^+ \rightarrow \omega \pi^+))/\Gamma_{\text{total}}$ Γ_{307}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

| | | | | |
|----------------------------------|----|---------------------|------|---|
| <5.9 × 10⁻⁶ | 90 | ¹ AUBERT | 09AF | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|----------------------------------|----|---------------------|------|---|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041T56
NODE=S041T56

NODE=S041T56;LINKAGE=EP

 $\Gamma(b_1^0 K^{*+} \times B(b_1^0 \rightarrow \omega \pi^0))/\Gamma_{\text{total}}$ Γ_{308}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

| | | | | |
|----------------------------------|----|---------------------|------|---|
| <6.7 × 10⁻⁶ | 90 | ¹ AUBERT | 09AF | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|----------------------------------|----|---------------------|------|---|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041T57
NODE=S041T57

NODE=S041T57;LINKAGE=EP

 $\Gamma(K^+ \bar{K}^0)/\Gamma_{\text{total}}$ Γ_{309}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

1.19±0.18 OUR AVERAGE[(1.36 ± 0.27) × 10⁻⁶ OUR 2012 AVERAGE]

| | | | | |
|----------------|------------------|----|------|------------------------------------|
| 1.11±0.19±0.05 | ¹ DUH | 13 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|----------------|------------------|----|------|------------------------------------|

| | | | | |
|----------------|------------------------|-----|------|------------------------------------|
| 1.61±0.44±0.09 | ¹ AUBERT,BE | 06C | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|----------------|------------------------|-----|------|------------------------------------|

NODE=S041B16
NODE=S041B16

NEW

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | | |
|----------------------------------|----|---------------------------|-----|------|------------------------------------|
| $1.22^{+0.32+0.13}_{-0.28-0.16}$ | | ¹ LIN | 07 | BELL | Repl. by DUH 13 |
| $1.0 \pm 0.4 \pm 0.1$ | | ¹ ABE | 05G | BELL | Repl. by LIN 07 |
| $1.5 \pm 0.5 \pm 0.1$ | | ¹ AUBERT, BE | 05E | BABR | Repl. by AUBERT, BE 06C |
| < 2.5 | 90 | ¹ AUBERT | 04M | BABR | Repl. by AUBERT, BE 05E |
| < 3.3 | 90 | ¹ CHAO | 04 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 3.3 | 90 | ¹ BORNHEIM | 03 | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 2.0 | 90 | ¹ CASEY | 02 | BELL | Repl. by CHAO 04 |
| < 5.0 | 90 | ¹ ABE | 01H | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 2.4 | 90 | ¹ AUBERT | 01E | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 5.1 | 90 | ¹ CRONIN-HEN.. | 00 | CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 21 | 90 | GODANG | 98 | CLE2 | Repl. by CRONIN-HENNESSY 00 |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B16;LINKAGE=EP

$\Gamma(\bar{K}^0 K^+ \pi^0)/\Gamma_{\text{total}}$ Γ_{310}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-----------------------|-----|----------------------|------|---|
| $< 24 \times 10^{-6}$ | 90 | ¹ ECKHART | 02 | CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B83
NODE=S041B83

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B83;LINKAGE=EP

$\Gamma(K^+ K_S^0 K_S^0)/\Gamma_{\text{total}}$ Γ_{311}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--|-------------|------|---------|
| 10.8 ± 0.6 OUR AVERAGE | | | |
| [(11.5 ± 1.3) × 10 ⁻⁶ OUR 2012 AVERAGE] | | | |

NODE=S041C6
NODE=S041C6

NEW

| | | | | |
|------------------|----------------------|-----|------|------------------------------------|
| 10.6 ± 0.5 ± 0.3 | ^{1,2} LEES | 120 | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 13.4 ± 1.9 ± 1.5 | ¹ GARMASH | 04 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|------------------|------------------------|-----|------|-------------------|
| 10.7 ± 1.2 ± 1.0 | ¹ AUBERT, B | 04V | BABR | Repl. by LEES 120 |
|------------------|------------------------|-----|------|-------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C6;LINKAGE=EP

² All intermediate charmonium and charm resonances are removed, except of χ_{c0} .

NODE=S041C6;LINKAGE=LE

$\Gamma(f_0(980) K^+, f_0 \rightarrow K_S^0 K_S^0)/\Gamma_{\text{total}}$ Γ_{312}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------------|------|---|
| 14.7 ± 2.8 ± 1.8 | ¹ LEES | 120 | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041T88
NODE=S041T88

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T88;LINKAGE=EP

$\Gamma(f_0(1710) K^+, f_0 \rightarrow K_S^0 K_S^0)/\Gamma_{\text{total}}$ Γ_{313}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|-------------------|------|---|
| $0.48^{+0.40}_{-0.24} \pm 0.11$ | ¹ LEES | 120 | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041T89
NODE=S041T89

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T89;LINKAGE=EP

$\Gamma(K^+ K_S^0 K_S^0 \text{ nonresonant})/\Gamma_{\text{total}}$ Γ_{314}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------------|------|---|
| 19.8 ± 3.7 ± 2.5 | ¹ LEES | 120 | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041T90
NODE=S041T90

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T90;LINKAGE=EP

$\Gamma(K_S^0 K_S^0 \pi^+)/\Gamma_{\text{total}}$ Γ_{315}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|------|---|
| < 0.51 | 90 | ¹ AUBERT | 09J | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C7
NODE=S041C7

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-------|----|----------------------|----|---|
| < 3.2 | 90 | ¹ GARMASH | 04 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------|----|----------------------|----|---|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C7;LINKAGE=EP

$\Gamma(K^+ K^- \pi^+)/\Gamma_{\text{total}}$ Γ_{316}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|------|---|
| 5.0 ± 0.5 ± 0.5 | | ¹ AUBERT | 07BB | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B62
NODE=S041B62

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-------|----|-----------------------|-----|---|
| < 13 | 90 | ¹ GARMASH | 04 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 6.3 | 90 | ^{1,2} AUBERT | 03M | BABR Repl. by AUBERT 07BB |
| < 12 | 90 | ³ GARMASH | 02 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Charm and charmonium contributions are subtracted, otherwise no assumptions about intermediate resonances.

³ Uses a reference decay mode $B^+ \rightarrow \bar{D}^0 \pi^+$ and $\bar{D}^0 \rightarrow K^+ \pi^-$ with $B(B^+ \rightarrow \bar{D}^0 \pi^+) \cdot B(\bar{D}^0 \rightarrow K^+ \pi^-) = (20.3 \pm 2.0) \times 10^{-5}$.

NODE=S041B62;LINKAGE=EP
NODE=S041B62;LINKAGE=TM

NODE=S041B62;LINKAGE=GM

$\Gamma(K^+ K^- \pi^+ \text{nonresonant})/\Gamma_{\text{total}}$ Γ_{317}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|----------|------------------------------------|
| <75 | 90 | BERGFELD | 96B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B4
NODE=S041B4

$\Gamma(K^+ \bar{K}^*(892)^0)/\Gamma_{\text{total}}$ Γ_{318}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|---------------------|-----------|------------------------------------|
| < 1.1 | 90 | ¹ AUBERT | 07AR BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| <129 | 90 | ABBIENDI | 00B OPAL | $e^+ e^- \rightarrow Z$ |
| <138 | 90 | ² ABE | 00C SLD | $e^+ e^- \rightarrow Z$ |
| < 5.3 | 90 | ¹ JESSOP | 00 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B38
NODE=S041B38

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² ABE 00C assumes $B(Z \rightarrow b\bar{b}) = (21.7 \pm 0.1)\%$ and the B fractions $f_{B^0} = f_{B^+} = (39.7^{+1.8}_{-2.2})\%$ and $f_{B_s} = (10.5^{+1.8}_{-2.2})\%$.

NODE=S041B38;LINKAGE=EP
NODE=S041B38;LINKAGE=KQ

$\Gamma(K^+ \bar{K}_0^*(1430)^0)/\Gamma_{\text{total}}$ Γ_{319}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|-----------|------------------------------------|
| <2.2 | 90 | ¹ AUBERT | 07AR BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C04
NODE=S041C04

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C04;LINKAGE=EP

$\Gamma(K^+ K^+ \pi^-)/\Gamma_{\text{total}}$ Γ_{320}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|----------------------|-----------|------------------------------------|
| < 1.6×10^{-7} | 90 | ¹ AUBERT | 08BE BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| < 2.4×10^{-6} | 90 | ¹ GARMASH | 04 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 1.3×10^{-6} | 90 | ² AUBERT | 03M BABR | Repl. by AUBERT 08BE |
| < 3.2×10^{-6} | 90 | ³ GARMASH | 02 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B63
NODE=S041B63

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Assumes equal production of B^0 and B^+ at the $\Upsilon(4S)$; charm and charmonium contributions are subtracted, otherwise no assumptions about intermediate resonances.

³ Uses a reference decay mode $B^+ \rightarrow \bar{D}^0 \pi^+$ and $\bar{D}^0 \rightarrow K^+ \pi^-$ with $B(B^+ \rightarrow \bar{D}^0 \pi^+) \cdot B(\bar{D}^0 \rightarrow K^+ \pi^-) = (20.3 \pm 2.0) \times 10^{-5}$.

NODE=S041B63;LINKAGE=EP
NODE=S041B63;LINKAGE=TM

NODE=S041B63;LINKAGE=GM

$\Gamma(K^+ K^+ \pi^- \text{nonresonant})/\Gamma_{\text{total}}$ Γ_{321}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|----------|-------------------------|
| <87.9 | 90 | ABBIENDI | 00B OPAL | $e^+ e^- \rightarrow Z$ |

NODE=S041B37
NODE=S041B37

$\Gamma(f_2'(1525) K^+)/\Gamma_{\text{total}}$ Γ_{322}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|-------------------------------------|----------|------------------------------------|
| 1.8 ± 0.5 OUR AVERAGE | | Error includes scale factor of 1.1. | | |
| 1.56 ± 0.36 ± 0.30 | | ^{1,2} LEES | 120 BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 2.8 ± 0.9 ^{+0.5} / _{-0.4} | | ^{1,3} LEES | 120 BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q67
NODE=S041Q67

OCCUR=2

● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●

| | | | | |
|----|----|------------------------|---------|------------------------------------|
| <8 | 90 | ^{1,4} GARMASH | 05 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|----|----|------------------------|---------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Measured in the $B^+ \rightarrow K^+ K^- K^+$ decay.

³ Measured in the $B^+ \rightarrow K^+ K_S^0 K_S^0$ decay.

⁴ GARMASH 05 reports $B(B^+ \rightarrow f_2'(1525) K^+) \cdot B(f_2'(1525) \rightarrow K^+ K^-) < 4.9 \times 10^{-6}$ at 90% CL. We divide this result by our best value of $B(f_2'(1525) \rightarrow K \bar{K}) = 88.7 \times 10^{-2}$ multiplied by 2/3 to account for the $K^+ K^-$ fraction.

NODE=S041Q67;LINKAGE=EP
NODE=S041Q67;LINKAGE=LA
NODE=S041Q67;LINKAGE=LB
NODE=S041Q67;LINKAGE=GA

$\Gamma(K^+ f_J(2220))/\Gamma_{\text{total}}$ Γ_{323}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|--------------------|---------|------------------------------------|
| not seen | ¹ HUANG | 03 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C9
NODE=S041C9

¹ No evidence is found for such decay and set a limit on $B(B^+ \rightarrow f_J(2220)) \times B(f_J(2220) \rightarrow \phi\phi) < 1.2 \times 10^{-6}$ at 90%CL where the $f_J(2220)$ is a possible glueball state.

NODE=S041C9;LINKAGE=A

$\Gamma(K^{*+}\pi^+K^-)/\Gamma_{\text{total}}$ Γ_{324}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|----------|-----------------------------------|
| <11.8 | 90 | 1 AUBERT,B | 06U BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T13
NODE=S041T13

NODE=S041T13;LINKAGE=EP

 $\Gamma(K^*(892)^+K^*(892)^0)/\Gamma_{\text{total}}$ Γ_{325}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|-------------|----------|-----------------------------------|
| 1.2±0.5±0.1 | | AUBERT | 09F BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| <71 | 90 | 1 GODANG | 02 CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes a helicity 00 configuration. For a helicity 11 configuration, the limit decreases to 4.8×10^{-5} .

NODE=S041B55
NODE=S041B55

NODE=S041B55;LINKAGE=Z1

 $\Gamma(K^{*+}K^+\pi^-)/\Gamma_{\text{total}}$ Γ_{326}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|----------|-----------------------------------|
| <6.1 | 90 | 1 AUBERT,B | 06U BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T14
NODE=S041T14

NODE=S041T14;LINKAGE=EP

 $\Gamma(K^+K^-K^+)/\Gamma_{\text{total}}$ Γ_{327}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|--|----------|-----------------------------------|
| 34.0±1.4 OUR AVERAGE | | Error includes scale factor of 1.4. [(33.7 ± 2.2) × 10 ⁻⁶ | | |
| OUR 2012 AVERAGE Scale factor = 1.4] | | | | |
| 34.6±0.6±0.9 | | 1,2 LEES | 120 BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 30.6±1.2±2.3 | | 1 GARMASH | 05 BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| 35.2±0.9±1.6 | | 1 AUBERT | 060 BABR | Repl. by LEES 120 |
| 32.8±1.8±2.8 | | 1 GARMASH | 04 BELL | Repl. by GARMASH 05 |
| 29.6±2.1±1.6 | | 3 AUBERT | 03M BABR | Repl. by AUBERT 060 |
| 35.3±3.7±4.5 | | 4 GARMASH | 02 BELL | Repl. by GARMASH 04 |
| <200 | 90 | 5 ADAM | 96D DLPH | $e^+e^- \rightarrow Z$ |
| <320 | 90 | 5 ABREU | 95N DLPH | Sup. by ADAM 96D |
| <350 | 90 | ALBRECHT | 91E ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.
² All intermediate charmonium and charm resonances are removed, except of χ_{c0} .
³ Assumes equal production of B^0 and B^+ at the $\Upsilon(4S)$; charm and charmonium contributions are subtracted, otherwise no assumptions about intermediate resonances.
⁴ Uses a reference decay mode $B^+ \rightarrow \bar{D}^0\pi^+$ and $\bar{D}^0 \rightarrow K^+\pi^-$ with $B(B^+ \rightarrow \bar{D}^0\pi^+) \cdot B(\bar{D}^0 \rightarrow K^+\pi^-) = (20.3 \pm 2.0) \times 10^{-5}$.
⁵ Assumes B^0 and B^- production fractions of 0.39, and B_s production fraction of 0.12.

NODE=S041R80
NODE=S041R80

NEW

NODE=S041R80;LINKAGE=EP
NODE=S041R80;LINKAGE=LE
NODE=S041R80;LINKAGE=TM

NODE=S041R80;LINKAGE=GM

NODE=S041R80;LINKAGE=SR

 $\Gamma(K^+\phi)/\Gamma_{\text{total}}$ Γ_{328}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|---|----------|-----------------------------------|
| 8.8 $\begin{smallmatrix} +0.7 \\ -0.6 \end{smallmatrix}$ OUR AVERAGE | | Error includes scale factor of 1.1. [(8.3 ± 0.7) × 10 ⁻⁶ | | |
| OUR 2012 AVERAGE] | | | | |
| 9.2 ± 0.4 $\begin{smallmatrix} +0.7 \\ -0.5 \end{smallmatrix}$ | | 1 LEES | 120 BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 7.6 ± 1.3 ± 0.6 | | 2 ACOSTA | 05J CDF | $\rho\bar{\rho}$ at 1.96 TeV |
| 9.60±0.92 $\begin{smallmatrix} +1.05 \\ -0.85 \end{smallmatrix}$ | | 1 GARMASH | 05 BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 5.5 $\begin{smallmatrix} +2.1 \\ -1.8 \end{smallmatrix}$ ± 0.6 | | 1 BRIERE | 01 CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| 8.4 ± 0.7 ± 0.7 | | 1 AUBERT | 060 BABR | Repl. by LEES 120 |
| 10.0 $\begin{smallmatrix} +0.9 \\ -0.8 \end{smallmatrix}$ ± 0.5 | | 1 AUBERT | 04A BABR | Repl. by AUBERT 060 |
| 9.4 ± 1.1 ± 0.7 | | 1 CHEN | 03B BELL | Repl. by GARMASH 05 |
| 14.6 $\begin{smallmatrix} +3.0 \\ -2.8 \end{smallmatrix}$ ± 2.0 | | 3 GARMASH | 02 BELL | Repl. by CHEN 03B |
| 7.7 $\begin{smallmatrix} +1.6 \\ -1.4 \end{smallmatrix}$ ± 0.8 | | 1 AUBERT | 01D BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| <144 | 90 | 4 ABE | 00C SLD | $e^+e^- \rightarrow Z$ |
| < 5 | 90 | 1 BERGFELD | 98 CLE2 | |
| <280 | 90 | 5 ADAM | 96D DLPH | $e^+e^- \rightarrow Z$ |
| < 12 | 90 | ASNER | 96 CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |
| <440 | 90 | 6 ABREU | 95N DLPH | Sup. by ADAM 96D |
| <180 | 90 | ALBRECHT | 91B ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |
| < 90 | 90 | 7 AVERY | 89B CLEO | $e^+e^- \rightarrow \Upsilon(4S)$ |
| <210 | 90 | AVERY | 87 CLEO | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R8
NODE=S041R8

NEW

- ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.
² Uses $B(B^+ \rightarrow J/\psi K^+) = (1.00 \pm 0.04) \times 10^{-3}$ and $B(J/\psi \rightarrow \mu^+ \mu^-) = 0.0588 \pm 0.0010$.
³ Uses a reference decay mode $B^+ \rightarrow \bar{D}^0 \pi^+$ and $\bar{D}^0 \rightarrow K^+ \pi^-$ with $B(B^+ \rightarrow \bar{D}^0 \pi^+) \cdot B(\bar{D}^0 \rightarrow K^+ \pi^-) = (20.3 \pm 2.0) \times 10^{-5}$.
⁴ ABE 00C assumes $B(Z \rightarrow b\bar{b}) = (21.7 \pm 0.1)\%$ and the B fractions $f_{B^0} = f_{B^+} = (39.7^{+1.8}_{-2.2})\%$ and $f_{B_s} = (10.5^{+1.8}_{-2.2})\%$.
⁵ ADAM 96D assumes $f_{B^0} = f_{B^-} = 0.39$ and $f_{B_s} = 0.12$.
⁶ Assumes a B^0, B^- production fraction of 0.39 and a B_s production fraction of 0.12.
⁷ AVERY 89B reports $< 8 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \bar{B}^0$. We rescale to 50%.

NODE=S041R8;LINKAGE=EP
 NODE=S041R8;LINKAGE=AC
 NODE=S041R8;LINKAGE=GM
 NODE=S041R8;LINKAGE=KQ
 NODE=S041R8;LINKAGE=DQ
 NODE=S041R8;LINKAGE=SR
 NODE=S041R8;LINKAGE=A1

$\Gamma(\bar{\rho}_0(980) K^+ \times B(\bar{\rho}_0(980) \rightarrow K^+ K^-))/\Gamma_{\text{total}}$ Γ_{329}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|----------------------|------|---|
| $9.4 \pm 1.6 \pm 2.8$ | | ¹ LEES | 120 | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $6.5 \pm 2.5 \pm 1.6$ | | ¹ AUBERT | 060 | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 2.9 | 90 | ¹ GARMASH | 05 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q65
 NODE=S041Q65

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q65;LINKAGE=EP

$\Gamma(a_2(1320) K^+ \times B(a_2(1320) \rightarrow K^+ K^-))/\Gamma_{\text{total}}$ Γ_{330}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|----------------------|------|---|
| $< 1.1 \times 10^{-6}$ | 90 | ¹ GARMASH | 05 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q66
 NODE=S041Q66

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q66;LINKAGE=EP

$\Gamma(X_0(1550) K^+ \times B(X_0(1550) \rightarrow K^+ K^-))/\Gamma_{\text{total}}$ Γ_{331}/Γ

$X_0(1550)$ is a possible spin zero state near 1.55 GeV/c² invariant mass of $K^+ K^-$.

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|---|---------------------|------|---|
| $4.3 \pm 0.6 \pm 0.3$ | ¹ AUBERT | 060 | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041T09
 NODE=S041T09
 NODE=S041T09

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T09;LINKAGE=EP

$\Gamma(\phi(1680) K^+ \times B(\phi(1680) \rightarrow K^+ K^-))/\Gamma_{\text{total}}$ Γ_{332}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|----------------------|------|---|
| $< 0.8 \times 10^{-6}$ | 90 | ¹ GARMASH | 05 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q68
 NODE=S041Q68

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q68;LINKAGE=EP

$\Gamma(\bar{\rho}_0(1710) K^+ \times B(\bar{\rho}_0(1710) \rightarrow K^+ K^-))/\Gamma_{\text{total}}$ Γ_{333}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|---|---------------------|------|---|
| 1.1 ± 0.6 OUR AVERAGE $[(1.7 \pm 1.0) \times 10^{-6}$ OUR 2012 AVERAGE] | | | |
| $1.12 \pm 0.25 \pm 0.50$ | ¹ LEES | 120 | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| $1.7 \pm 1.0 \pm 0.3$ | ¹ AUBERT | 060 | BABR Repl. by LEES 120 |

NODE=S041T08
 NODE=S041T08

NEW

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T08;LINKAGE=EP

$\Gamma(K^+ K^- K^+ \text{ nonresonant})/\Gamma_{\text{total}}$ Γ_{334}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|----------------------|------|---|
| $23.8^{+2.8}_{-5.0}$ OUR AVERAGE | | | | |
| [[$(28^{+9}_{-16}) \times 10^{-6}$ OUR 2012 AVERAGE Scale factor = 3.3] | | | | |
| $22.8 \pm 2.7 \pm 7.6$ | | ¹ LEES | 120 | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $24.0 \pm 1.5^{+2.6}_{-6.0}$ | | ¹ GARMASH | 05 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $50.0 \pm 6.0 \pm 4.0$ | | ¹ AUBERT | 060 | BABR Repl. by LEES 120 |
| < 38 | 90 | BERGFELD | 96B | CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B5
 NODE=S041B5

NEW

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B5;LINKAGE=EP

$\Gamma(K^*(892)^+ K^+ K^-)/\Gamma_{\text{total}}$ Γ_{335}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|-----------------------|------|---|
| $36.2 \pm 3.3 \pm 3.6$ | | ¹ AUBERT,B | 06U | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| < 1600 | 90 | ALBRECHT | 91E | ARG $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R84
 NODE=S041R84

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R84;LINKAGE=EP

$\Gamma(K^*(892)^+ \phi) / \Gamma_{\text{total}}$ Γ_{336} / Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|---------------------|-----------|-------------------------------------|
| 10.0 ± 2.0 OUR AVERAGE | | | | Error includes scale factor of 1.7. |
| 11.2 ± 1.0 ± 0.9 | | ¹ AUBERT | 07BA BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 6.7 ^{+2.1+0.7} _{-1.9-1.0} | | ¹ CHEN | 03B BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|--|----|-----------------------|----------|------------------------------------|
| 12.7 ^{+2.2} _{-2.0} ± 1.1 | | ¹ AUBERT | 03V BABR | Repl. by AUBERT 07BA |
| 9.7 ^{+4.2} _{-3.4} ± 1.7 | | ¹ AUBERT | 01D BABR | Repl. by AUBERT 03V |
| < 22.5 | 90 | ¹ BRIERE | 01 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 41 | 90 | ¹ BERGFELD | 98 CLE2 | |
| < 70 | 90 | ASNER | 96 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 1300 | 90 | ALBRECHT | 91B ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R76
NODE=S041R76

NODE=S041R76;LINKAGE=EP

 $\Gamma(\phi(K\pi)_0^{*+}) / \Gamma_{\text{total}}$ Γ_{337} / Γ

$(K\pi)_0^{*+}$ is the total S-wave composed of $K_0^*(1430)$ and nonresonant that are described using LASS shape.

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|---------------------|-----------|------------------------------------|
| 8.3 ± 1.4 ± 0.8 | ¹ AUBERT | 08BI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T50
NODE=S041T50
NODE=S041T50

NODE=S041T50;LINKAGE=EP

 $\Gamma(\phi K_1(1270)^+) / \Gamma_{\text{total}}$ Γ_{338} / Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|---------------------|-----------|------------------------------------|
| 6.1 ± 1.6 ± 1.1 | ¹ AUBERT | 08BI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T45
NODE=S041T45

NODE=S041T45;LINKAGE=EP

 $\Gamma(\phi K_1(1400)^+) / \Gamma_{\text{total}}$ Γ_{339} / Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|-----------|------------------------------------|
| < 3.2 | 90 | ¹ AUBERT | 08BI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|--------|----|----------|---------|------------------------------------|
| < 1100 | 90 | ALBRECHT | 91B ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------|----|----------|---------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R77
NODE=S041R77

NODE=S041R77;LINKAGE=EP

 $\Gamma(\phi K^*(1410)^+) / \Gamma_{\text{total}}$ Γ_{340} / Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|-----------|------------------------------------|
| < 4.3 | 90 | ¹ AUBERT | 08BI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T46
NODE=S041T46

NODE=S041T46;LINKAGE=EP

 $\Gamma(\phi K_0^*(1430)^+) / \Gamma_{\text{total}}$ Γ_{341} / Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|---------------------|-----------|------------------------------------|
| 7.0 ± 1.3 ± 0.9 | ¹ AUBERT | 08BI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T47
NODE=S041T47

NODE=S041T47;LINKAGE=EP

 $\Gamma(\phi K_2^*(1430)^+) / \Gamma_{\text{total}}$ Γ_{342} / Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|-----------|------------------------------------|
| 8.4 ± 1.8 ± 1.0 | | ¹ AUBERT | 08BI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|--------|----|----------|---------|------------------------------------|
| < 3400 | 90 | ALBRECHT | 91B ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------|----|----------|---------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R78
NODE=S041R78

NODE=S041R78;LINKAGE=EP

 $\Gamma(\phi K_2^*(1770)^+) / \Gamma_{\text{total}}$ Γ_{343} / Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|-----------|------------------------------------|
| < 15.0 | 90 | ¹ AUBERT | 08BI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T48
NODE=S041T48

NODE=S041T48;LINKAGE=EP

 $\Gamma(\phi K_2^*(1820)^+) / \Gamma_{\text{total}}$ Γ_{344} / Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|-----------|------------------------------------|
| < 16.3 | 90 | ¹ AUBERT | 08BI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T49
NODE=S041T49

NODE=S041T49;LINKAGE=EP

$\Gamma(a_1^+ K^0)/\Gamma_{\text{total}}$ Γ_{345}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|----------------------|------|------------------------------------|
| <3.6 | 90 | 1,2 DEL-AMO-SA...10I | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes $B(a_1^\pm \rightarrow \pi^\pm \pi^\mp \pi^\pm) = 0.5$

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T65
NODE=S041T65

NODE=S041T65;LINKAGE=DE
NODE=S041T65;LINKAGE=EP

 $\Gamma(K^+ \phi\phi)/\Gamma_{\text{total}}$ Γ_{346}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|----------------------------|-------------------------------------|------|---------|
| 5.0±1.2 OUR AVERAGE | Error includes scale factor of 2.3. | | |

5.6±0.5±0.3 ¹ LEES 11A BABR $e^+ e^- \rightarrow \Upsilon(4S)$

2.6^{+1.1}_{-0.9}±0.3 ¹ HUANG 03 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

7.5±1.0±0.7 ¹ AUBERT,BE 06H BABR Repl. by LEES 11A

¹ Assumes equal production of B^0 and B^+ at the $\Upsilon(4S)$ and for a $\phi\phi$ invariant mass below 2.85 GeV/ c^2 .

NODE=S041C8
NODE=S041C8

NODE=S041C8;LINKAGE=A

 $\Gamma(\eta' \eta' K^+)/\Gamma_{\text{total}}$ Γ_{347}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-----------------------|----------|------------------------------------|
| <25 | 90 | ¹ AUBERT,B | 06P BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T12
NODE=S041T12

NODE=S041T12;LINKAGE=EP

 $\Gamma(\omega\phi K^+)/\Gamma_{\text{total}}$ Γ_{348}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|------------------|---------|------------------------------------|
| <1.9 | 90 | ¹ LIU | 09 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T54
NODE=S041T54

NODE=S041T54;LINKAGE=EP

 $\Gamma(X(1812) K^+ \times B(X \rightarrow \omega\phi))/\Gamma_{\text{total}}$ Γ_{349}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|------------------|---------|------------------------------------|
| <0.32 | 90 | ¹ LIU | 09 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T55
NODE=S041T55

NODE=S041T55;LINKAGE=EP

 $\Gamma(K^*(892)^+ \gamma)/\Gamma_{\text{total}}$ Γ_{350}/Γ

| VALUE (units 10^{-5}) | CL% | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-----|-------------|------|---------|
| 4.21±0.18 OUR AVERAGE | | | | |

4.22±0.14±0.16 ¹ AUBERT 09AO BABR $e^+ e^- \rightarrow \Upsilon(4S)$

4.25±0.31±0.24 ² NAKAO 04 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

3.76^{+0.89}_{-0.83}±0.28 ² COAN 00 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

3.87±0.28±0.26 ³ AUBERT,BE 04A BABR Repl. by AUBERT 09AO

3.83±0.62±0.22 ² AUBERT 02C BABR Repl. by AUBERT,BE 04A

5.7 ±3.1 ±1.1 ⁴ AMMAR 93 CLE2 Repl. by COAN 00

< 55 90 ⁵ ALBRECHT 89G ARG $e^+ e^- \rightarrow \Upsilon(4S)$

< 55 90 ⁵ AVERY 89B CLEO $e^+ e^- \rightarrow \Upsilon(4S)$

<180 90 AVERY 87 CLEO $e^+ e^- \rightarrow \Upsilon(4S)$

¹ Uses $B(\Upsilon(4S) \rightarrow B^+ B^-) = (51.6 \pm 0.6)\%$ and $B(\Upsilon(4S) \rightarrow B^0 \bar{B}^0) = (48.4 \pm 0.6)\%$.

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

³ Uses the production ratio of charged and neutral B from $\Upsilon(4S)$ decays $R^{+}/0 = 1.006 \pm 0.048$.

⁴ AMMAR 93 observed 4.1 ± 2.3 events above background.

⁵ Assumes the $\Upsilon(4S)$ decays 43% to $B^0 \bar{B}^0$.

NODE=S041R9
NODE=S041R9

NODE=S041R9;LINKAGE=AB
NODE=S041R9;LINKAGE=EP
NODE=S041R9;LINKAGE=AU

NODE=S041R9;LINKAGE=B
NODE=S041R9;LINKAGE=A1

 $\Gamma(K_1(1270)^+ \gamma)/\Gamma_{\text{total}}$ Γ_{351}/Γ

| VALUE (units 10^{-5}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
| 4.3±0.9±0.9 | | | | |

¹ YANG 05 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

< 9.9 90 ¹ NISHIDA 02 BELL Repl. by YANG 05

<730 90 ² ALBRECHT 89G ARG $e^+ e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² ALBRECHT 89G reports < 0.0066 assuming the $\Upsilon(4S)$ decays 45% to $B^0 \bar{B}^0$. We rescale to 50%.

NODE=S041R26
NODE=S041R26

NODE=S041R26;LINKAGE=EP
NODE=S041R26;LINKAGE=A2

$\Gamma(\eta K^+ \gamma)/\Gamma_{\text{total}}$ Γ_{352}/Γ VALUE (units 10^{-6})

DOCUMENT ID TECN COMMENT

7.9 \pm 0.9 OUR AVERAGE7.7 \pm 1.0 \pm 0.41,2 AUBERT 09 BABR $e^+ e^- \rightarrow \Upsilon(4S)$ 8.4 \pm 1.5 $^{+1.2}_{-0.9}$ 2,3 NISHIDA 05 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

10.0 \pm 1.3 \pm 0.5

1,2 AUBERT,B 06M BABR Repl. by AUBERT 09

¹ $m_{\eta K} < 3.25 \text{ GeV}/c^2$.² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.³ $m_{\eta K} < 2.4 \text{ GeV}/c^2$ NODE=S041S06
NODE=S041S06NODE=S041S06;LINKAGE=AR
NODE=S041S06;LINKAGE=EP
NODE=S041S06;LINKAGE=NI $\Gamma(\eta' K^+ \gamma)/\Gamma_{\text{total}}$ Γ_{353}/Γ VALUE (units 10^{-6})

DOCUMENT ID TECN COMMENT

2.9 $^{+1.0}_{-0.9}$ OUR AVERAGE3.6 \pm 1.2 \pm 0.41,2 WEDD 10 BELL $e^+ e^- \rightarrow \Upsilon(4S)$ 1.9 $^{+1.5}_{-1.2}$ \pm 0.11,3 AUBERT,B 06M BABR $e^+ e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² $m_{\eta' K} < 3.4 \text{ GeV}/c^2$.³ Set the upper limit of 4.2×10^{-6} at 90% CL with $m_{\eta' K} < 3.25 \text{ GeV}/c^2$.NODE=S041T11
NODE=S041T11NODE=S041T11;LINKAGE=EP
NODE=S041T11;LINKAGE=WE
NODE=S041T11;LINKAGE=AR $\Gamma(\phi K^+ \gamma)/\Gamma_{\text{total}}$ Γ_{354}/Γ VALUE (units 10^{-6})

DOCUMENT ID TECN COMMENT

2.7 \pm 0.4 OUR AVERAGE Error includes scale factor of 1.2.2.48 \pm 0.30 \pm 0.241 SAHOO 11A BELL $e^+ e^- \rightarrow \Upsilon(4S)$ 3.5 \pm 0.6 \pm 0.41 AUBERT 07Q BABR $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

3.4 \pm 0.9 \pm 0.4

1 DRUTSKOY 04 BELL Repl. by SAHOO 11A

¹ Assumes equal production of B^+ and B^0 at $\Upsilon(4S)$.NODE=S041RA3
NODE=S041RA3

NODE=S041RA3;LINKAGE=EP

 $\Gamma(K^+ \pi^- \pi^+ \gamma)/\Gamma_{\text{total}}$ Γ_{355}/Γ VALUE (units 10^{-5})

DOCUMENT ID TECN COMMENT

2.76 \pm 0.22 OUR AVERAGE Error includes scale factor of 1.2.2.95 \pm 0.13 \pm 0.201,2 AUBERT 07R BABR $e^+ e^- \rightarrow \Upsilon(4S)$ 2.50 \pm 0.18 \pm 0.222,3 YANG 05 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

2.4 \pm 0.5 $^{+0.4}_{-0.2}$

2,4 NISHIDA 02 BELL Repl. by YANG 05

¹ $M_{K \pi \pi} < 1.8 \text{ GeV}/c^2$.² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.³ $M_{K \pi \pi} < 2.0 \text{ GeV}/c^2$.⁴ $M_{K \pi \pi} < 2.4 \text{ GeV}/c^2$.NODE=S041B84
NODE=S041B84NODE=S041B84;LINKAGE=AT
NODE=S041B84;LINKAGE=EP
NODE=S041B84;LINKAGE=YA
NODE=S041B84;LINKAGE=NB $\Gamma(K^*(892)^0 \pi^+ \gamma)/\Gamma_{\text{total}}$ Γ_{356}/Γ

VALUE

DOCUMENT ID TECN COMMENT

(2.0 $^{+0.7}_{-0.6}$ \pm 0.2) $\times 10^{-5}$ 1,2 NISHIDA 02 BELL $e^+ e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² $M_{K \pi \pi} < 2.4 \text{ GeV}/c^2$.NODE=S041B85
NODE=S041B85NODE=S041B85;LINKAGE=EP
NODE=S041B85;LINKAGE=NB $\Gamma(K^+ \rho^0 \gamma)/\Gamma_{\text{total}}$ Γ_{357}/Γ

VALUE

CL%

DOCUMENT ID TECN COMMENT

 $< 2.0 \times 10^{-5}$

90

1,2 NISHIDA 02 BELL $e^+ e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² $M_{K \pi \pi} < 2.4 \text{ GeV}/c^2$.NODE=S041B86
NODE=S041B86NODE=S041B86;LINKAGE=EP
NODE=S041B86;LINKAGE=NB $\Gamma(K^+ \pi^- \pi^+ \gamma \text{ nonresonant})/\Gamma_{\text{total}}$ Γ_{358}/Γ

VALUE

CL%

DOCUMENT ID TECN COMMENT

 $< 9.2 \times 10^{-6}$

90

1,2 NISHIDA 02 BELL $e^+ e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² $M_{K \pi \pi} < 2.4 \text{ GeV}/c^2$.NODE=S041B87
NODE=S041B87NODE=S041B87;LINKAGE=EP
NODE=S041B87;LINKAGE=NB

$\Gamma(K^0\pi^+\pi^0\gamma)/\Gamma_{\text{total}}$ Γ_{359}/Γ VALUE (units 10^{-5})

DOCUMENT ID

TECN

COMMENT

4.56±0.42±0.311,2 AUBERT 07R BABR $e^+e^- \rightarrow \Upsilon(4S)$ ¹ $M_{K\pi\pi} < 1.8 \text{ GeV}/c^2$.² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041T19
NODE=S041T19NODE=S041T19;LINKAGE=AT
NODE=S041T19;LINKAGE=EP $\Gamma(K_1(1400)^+\gamma)/\Gamma_{\text{total}}$ Γ_{360}/Γ VALUE (units 10^{-5})

CL%

DOCUMENT ID

TECN

COMMENT

< **1.5**

90

¹ YANG 05 BELL $e^+e^- \rightarrow \Upsilon(4S)$

••• We do not use the following data for averages, fits, limits, etc. •••

< 5.0

90

¹ NISHIDA 02 BELL Repl. by YANG 05

<220

90

² ALBRECHT 89G ARG $e^+e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² ALBRECHT 89G reports < 0.0020 assuming the $\Upsilon(4S)$ decays 45% to $B^0\bar{B}^0$. We rescale to 50%.NODE=S041R27
NODE=S041R27NODE=S041R27;LINKAGE=EP
NODE=S041R27;LINKAGE=A2 $\Gamma(K_2^*(1430)^+\gamma)/\Gamma_{\text{total}}$ Γ_{361}/Γ VALUE (units 10^{-5})

CL%

DOCUMENT ID

TECN

COMMENT

1.45±0.40±0.15¹ AUBERT,B 04U BABR $e^+e^- \rightarrow \Upsilon(4S)$

••• We do not use the following data for averages, fits, limits, etc. •••

<140

90

² ALBRECHT 89G ARG $e^+e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² ALBRECHT 89G reports < 0.0013 assuming the $\Upsilon(4S)$ decays 45% to $B^0\bar{B}^0$. We rescale to 50%.NODE=S041R28
NODE=S041R28NODE=S041R28;LINKAGE=AU
NODE=S041R28;LINKAGE=A2 $\Gamma(K^*(1680)^+\gamma)/\Gamma_{\text{total}}$ Γ_{362}/Γ

VALUE

CL%

DOCUMENT ID

TECN

COMMENT

<**0.0019**

90

¹ ALBRECHT 89G ARG $e^+e^- \rightarrow \Upsilon(4S)$ ¹ ALBRECHT 89G reports < 0.0017 assuming the $\Upsilon(4S)$ decays 45% to $B^0\bar{B}^0$. We rescale to 50%.NODE=S041R29
NODE=S041R29

NODE=S041R29;LINKAGE=A2

 $\Gamma(K_3^*(1780)^+\gamma)/\Gamma_{\text{total}}$ Γ_{363}/Γ VALUE (units 10^{-6})

CL%

DOCUMENT ID

TECN

COMMENT

< **39**

90

1,2 NISHIDA 05 BELL $e^+e^- \rightarrow \Upsilon(4S)$

••• We do not use the following data for averages, fits, limits, etc. •••

<5500

90

³ ALBRECHT 89G ARG $e^+e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² Uses $B(K_3^*(1780) \rightarrow \eta K) = 0.11^{+0.05}_{-0.04}$.³ ALBRECHT 89G reports < 0.005 assuming the $\Upsilon(4S)$ decays 45% to $B^0\bar{B}^0$. We rescale to 50%.NODE=S041R30
NODE=S041R30NODE=S041R30;LINKAGE=EP
NODE=S041R30;LINKAGE=NS
NODE=S041R30;LINKAGE=A2 $\Gamma(K_4^*(2045)^+\gamma)/\Gamma_{\text{total}}$ Γ_{364}/Γ

VALUE

CL%

DOCUMENT ID

TECN

COMMENT

<**0.0099**

90

¹ ALBRECHT 89G ARG $e^+e^- \rightarrow \Upsilon(4S)$ ¹ ALBRECHT 89G reports < 0.0090 assuming the $\Upsilon(4S)$ decays 45% to $B^0\bar{B}^0$. We rescale to 50%.NODE=S041R31
NODE=S041R31

NODE=S041R31;LINKAGE=A2

 $\Gamma(\rho^+\gamma)/\Gamma_{\text{total}}$ Γ_{365}/Γ VALUE (units 10^{-6})

CL%

DOCUMENT ID

TECN

COMMENT

0.98±0.25 OUR AVERAGE $1.20^{+0.42}_{-0.37} \pm 0.20$ ¹ AUBERT 08BH BABR $e^+e^- \rightarrow \Upsilon(4S)$ $0.87^{+0.29+0.09}_{-0.27-0.11}$ ¹ TANIGUCHI 08 BELL $e^+e^- \rightarrow \Upsilon(4S)$

••• We do not use the following data for averages, fits, limits, etc. •••

 $1.10^{+0.37}_{-0.33} \pm 0.09$ ¹ AUBERT 07L BABR Repl. by AUBERT 08BH $0.55^{+0.42+0.09}_{-0.36-0.08}$ ¹ MOHAPATRA 06 BELL Repl. by TANIGUCHI 08 $0.9^{+0.6}_{-0.5} \pm 0.1$

90

¹ AUBERT 05 BABR Repl. by AUBERT 07L

< 2.2

90

¹ MOHAPATRA 05 BELL $e^+e^- \rightarrow \Upsilon(4S)$

< 2.1

90

¹ AUBERT 04C BABR $e^+e^- \rightarrow \Upsilon(4S)$

<13

90

1,2 COAN 00 CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at $\Upsilon(4S)$.² No evidence for a nonresonant $K\pi\gamma$ contamination was seen; the central value assumes no contamination.NODE=S041B42
NODE=S041B42NODE=S041B42;LINKAGE=EP
NODE=S041B42;LINKAGE=AP

$\Gamma(\pi^+\pi^0)/\Gamma_{\text{total}}$ Γ_{366}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--|---------------------|-----------------------|-----------|--|
| 5.5 ± 0.4 OUR AVERAGE | | | | Error includes scale factor of 1.2. $[(5.7 \pm 0.5) \times 10^{-6}]$ |
| OUR 2012 AVERAGE | Scale factor = 1.4] | | | |
| 5.86 ± 0.26 ± 0.38 | | ¹ DUH | 13 BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 5.02 ± 0.46 ± 0.29 | | ¹ AUBERT | 07BC BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 4.6 $\begin{smallmatrix} +1.8 & +0.6 \\ -1.6 & -0.7 \end{smallmatrix}$ | | ¹ BORNHEIM | 03 CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R16

NODE=S041R16

NEW

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|--|----|-----------------------------|----------|-----------------------------------|
| 6.5 ± 0.4 ± 0.4 | | ¹ LIN | 07A BELL | Repl. by DUH 13 |
| 5.8 ± 0.6 ± 0.4 | | ¹ AUBERT | 05L BABR | Repl. by AUBERT 07BC |
| 5.0 ± 1.2 ± 0.5 | | ¹ CHAO | 04 BELL | Repl. by LIN 07A |
| 5.5 $\begin{smallmatrix} +1.0 & \pm 0.6 \\ -1.9 & \end{smallmatrix}$ | | ¹ AUBERT | 03L BABR | Repl. by AUBERT 05L |
| 7.4 $\begin{smallmatrix} +2.3 & \pm 0.9 \\ -2.2 & \end{smallmatrix}$ | | ¹ CASEY | 02 BELL | Repl. by CHAO 04 |
| < 13.4 | 90 | ¹ ABE | 01H BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| < 9.6 | 90 | ¹ AUBERT | 01E BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| < 12.7 | 90 | ¹ CRONIN-HEN..00 | CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |
| < 20 | 90 | GODANG | 98 CLE2 | Repl. by CRONIN-HENNESSY 00 |
| < 17 | 90 | ASNER | 96 CLE2 | Repl. by GODANG 98 |
| < 240 | 90 | ¹ ALBRECHT | 90B ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |
| < 2300 | 90 | ² BEBEK | 87 CLEO | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² BEBEK 87 assume the $\Upsilon(4S)$ decays 43% to $B^0\bar{B}^0$.

NODE=S041R16;LINKAGE=EP

NODE=S041R16;LINKAGE=A

 $\Gamma(\pi^+\pi^0)/\Gamma(K^0\pi^+)$ $\Gamma_{366}/\Gamma_{249}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|----------------------------|-------------|----------|-----------------------------------|
| 0.285 ± 0.02 ± 0.02 | LIN | 07A BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041T25

NODE=S041T25

 $\Gamma(\pi^+\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{367}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|---------------------|----------|-----------------------------------|
| 15.2 ± 0.6 $\begin{smallmatrix} +1.3 \\ -1.2 \end{smallmatrix}$ | | ¹ AUBERT | 09L BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R36

NODE=S041R36

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|------------------|----|---------------------------|----------|-----------------------------------|
| 16.2 ± 1.2 ± 0.9 | | ¹ AUBERT,B | 05G BABR | Repl. by AUBERT 09L |
| 10.9 ± 3.3 ± 1.6 | | ¹ AUBERT | 03M BABR | Repl. by AUBERT 05G |
| < 130 | 90 | ² ADAM | 96D DLPH | $e^+e^- \rightarrow Z$ |
| < 220 | 90 | ³ ABREU | 95N DLPH | Sup. by ADAM 96D |
| < 450 | 90 | ⁴ ALBRECHT | 90B ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |
| < 190 | 90 | ⁵ BORTOLETTO89 | CLEO | $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^0 and B^+ at the $\Upsilon(4S)$; charm and charmonium contributions are subtracted, otherwise no assumptions about intermediate resonances.

² ADAM 96D assumes $f_{B^0} = f_{B^-} = 0.39$ and $f_{B_s} = 0.12$.

³ Assumes a B^0 , B^- production fraction of 0.39 and a B_s production fraction of 0.12.

⁴ ALBRECHT 90B limit assumes equal production of $B^0\bar{B}^0$ and B^+B^- at $\Upsilon(4S)$.

⁵ BORTOLETTO 89 reports $< 1.7 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\bar{B}^0$. We rescale to 50%.

NODE=S041R36;LINKAGE=TM

NODE=S041R36;LINKAGE=DQ

NODE=S041R36;LINKAGE=SR

NODE=S041R36;LINKAGE=Q

NODE=S041R36;LINKAGE=A1

 $\Gamma(\rho^0\pi^+)/\Gamma_{\text{total}}$ Γ_{368}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|---------------------|----------|-----------------------------------|
| 8.3 ± 1.2 OUR AVERAGE | | | | |
| 8.1 ± 0.7 $\begin{smallmatrix} +1.3 \\ -1.6 \end{smallmatrix}$ | | ¹ AUBERT | 09L BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 8.0 $\begin{smallmatrix} +2.3 & \pm 0.7 \\ -2.0 & \end{smallmatrix}$ | | ¹ GORDON | 02 BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 10.4 $\begin{smallmatrix} +3.3 & \pm 2.1 \\ -3.4 & \end{smallmatrix}$ | | ¹ JESSOP | 00 CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R4

NODE=S041R4

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|--|----|-----------------------|----------|------------------------|
| 8.8 ± 1.0 $\begin{smallmatrix} +0.6 \\ -0.9 \end{smallmatrix}$ | | ¹ AUBERT,B | 05G BABR | Repl. by AUBERT 09L |
| 9.5 ± 1.1 ± 0.9 | | ¹ AUBERT | 04Z BABR | Repl. by AUBERT 05G |
| < 83 | 90 | ² ABE | 00C SLD | $e^+e^- \rightarrow Z$ |
| < 160 | 90 | ³ ADAM | 96D DLPH | $e^+e^- \rightarrow Z$ |
| < 43 | 90 | ASNER | 96 CLE2 | Repl. by JESSOP 00 |

| | | | | | |
|------|----|-------------------------|-----|------|-----------------------------------|
| <260 | 90 | ⁴ ABREU | 95N | DLPH | Sup. by ADAM 96D |
| <150 | 90 | ¹ ALBRECHT | 90B | ARG | $e^+e^- \rightarrow \Upsilon(4S)$ |
| <170 | 90 | ⁵ BORTOLETTO | 89 | CLEO | $e^+e^- \rightarrow \Upsilon(4S)$ |
| <230 | 90 | ⁵ BEBEK | 87 | CLEO | $e^+e^- \rightarrow \Upsilon(4S)$ |
| <600 | 90 | GILES | 84 | CLEO | Repl. by BEBEK 87 |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² ABE 00C assumes $B(Z \rightarrow b\bar{b})=(21.7 \pm 0.1)\%$ and the B fractions $f_{B^0}=f_{B^+}=(39.7^{+1.8}_{-2.2})\%$ and $f_{B_s}=(10.5^{+1.8}_{-2.2})\%$.

³ ADAM 96D assumes $f_{B^0}=f_{B^-}=0.39$ and $f_{B_s}=0.12$.

⁴ Assumes a B^0 , B^- production fraction of 0.39 and a B_s production fraction of 0.12.

⁵ Papers assume the $\Upsilon(4S)$ decays 43% to $B^0\bar{B}^0$. We rescale to 50%.

NODE=S041R4;LINKAGE=EP

NODE=S041R4;LINKAGE=KQ

NODE=S041R4;LINKAGE=DQ

NODE=S041R4;LINKAGE=SR

NODE=S041R4;LINKAGE=A1

$$\frac{[\Gamma(K^*(892)^0\pi^+) + \Gamma(\rho^0\pi^+)]/\Gamma_{\text{total}}}{\Gamma_{275} + \Gamma_{368}}/\Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---------------------------|-----|-------------------|------|-----------------------------|
| $170^{+120}_{-80} \pm 20$ | | ¹ ADAM | 96D | DLPH $e^+e^- \rightarrow Z$ |

NODE=S041B8

NODE=S041B8

¹ ADAM 96D assumes $f_{B^0}=f_{B^-}=0.39$ and $f_{B_s}=0.12$.

NODE=S041B8;LINKAGE=DQ

$$\frac{\Gamma(\pi^+ f_0(980) \times B(f_0(980) \rightarrow \pi^+\pi^-))/\Gamma_{\text{total}}}{\Gamma_{369}}/\Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------------------|------|---|
| < 1.5 | 90 | ¹ AUBERT | 09L | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |
| • • • | | | | We do not use the following data for averages, fits, limits, etc. • • • |
| < 3.0 | 90 | ¹ AUBERT,B | 05G | BABR Repl. by AUBERT 09L |
| <140 | 90 | ² BORTOLETTO | 89 | CLEO $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R34

NODE=S041R34

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² BORTOLETTO 89 reports $< 1.2 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\bar{B}^0$. We rescale to 50%.

NODE=S041R34;LINKAGE=EP

NODE=S041R34;LINKAGE=A1

$$\frac{\Gamma(\pi^+ f_2(1270))/\Gamma_{\text{total}}}{\Gamma_{370}}/\Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|----------------------------------|-----|-------------------------|------|---|
| $1.59^{+0.66+0.02}_{-0.43-0.05}$ | | ^{1,2} AUBERT | 09L | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |
| • • • | | | | We do not use the following data for averages, fits, limits, etc. • • • |
| $4.1 \pm 1.3 \pm 0.1$ | | ^{2,3} AUBERT,B | 05G | BABR Repl. by AUBERT 09L |
| <240 | 90 | ⁴ BORTOLETTO | 89 | CLEO $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R35

NODE=S041R35

¹ AUBERT 09L reports $[\Gamma(B^+ \rightarrow \pi^+ f_2(1270))/\Gamma_{\text{total}}] \times [B(f_2(1270) \rightarrow \pi^+\pi^-)] = (0.9 \pm 0.2 \pm 0.1^{+0.3}_{-0.1}) \times 10^{-6}$ which we divide by our best value $B(f_2(1270) \rightarrow \pi^+\pi^-) = (56.5^{+1.6}_{-0.8}) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041R35;LINKAGE=AB

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R35;LINKAGE=EP

³ AUBERT,B 05G reports $[\Gamma(B^+ \rightarrow \pi^+ f_2(1270))/\Gamma_{\text{total}}] \times [B(f_2(1270) \rightarrow \pi^+\pi^-)] = (2.3 \pm 0.6 \pm 0.4) \times 10^{-6}$ which we divide by our best value $B(f_2(1270) \rightarrow \pi^+\pi^-) = (56.5^{+1.6}_{-0.8}) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041R35;LINKAGE=AU

⁴ BORTOLETTO 89 reports $< 2.1 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\bar{B}^0$. We rescale to 50%.

NODE=S041R35;LINKAGE=A1

$$\frac{\Gamma(\rho(1450)^0\pi^+ \times B(\rho^0 \rightarrow \pi^+\pi^-))/\Gamma_{\text{total}}}{\Gamma_{371}}/\Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|-----------------------------|-----|---------------------|------|--|
| $1.4 \pm 0.4^{+0.5}_{-0.8}$ | | ¹ AUBERT | 09L | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041S01

NODE=S041S01

• • • We do not use the following data for averages, fits, limits, etc. • • •

<2.3 90 ¹ AUBERT,B 05G BABR Repl. by AUBERT 09L

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041S01;LINKAGE=EP

$$\frac{\Gamma(f_0(1370)\pi^+ \times B(f_0(1370) \rightarrow \pi^+\pi^-))/\Gamma_{\text{total}}}{\Gamma_{372}}/\Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|------|--|
| <4.0 | 90 | ¹ AUBERT | 09L | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041S02

NODE=S041S02

• • • We do not use the following data for averages, fits, limits, etc. • • •

<3.0 90 ¹ AUBERT,B 05G BABR Repl. by AUBERT 09L

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041S02;LINKAGE=EP

$\Gamma(f_0(500)\pi^+ \times B(f_0(500) \rightarrow \pi^+ \pi^-))/\Gamma_{\text{total}}$ Γ_{373}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-----------------------|----------|------------------------------------|
| <4.1 | 90 | ¹ AUBERT,B | 05G BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041S03
NODE=S041S03

NODE=S041S03;LINKAGE=EP

 $\Gamma(\pi^+ \pi^- \pi^+ \text{nonresonant})/\Gamma_{\text{total}}$ Γ_{374}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|-----------------------------|-----|---------------------|----------|------------------------------------|
| $5.3 \pm 0.7^{+1.3}_{-0.8}$ | | ¹ AUBERT | 09L BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-------|----|-----------------------|----------|------------------------------------|
| < 4.6 | 90 | ¹ AUBERT,B | 05G BABR | Repl. by AUBERT 09L |
| <41 | 90 | BERGFELD | 96B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041B2
NODE=S041B2

NODE=S041B2;LINKAGE=EP

 $\Gamma(\pi^+ \pi^0 \pi^0)/\Gamma_{\text{total}}$ Γ_{375}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|------------------------|-----|-----------------------|---------|------------------------------------|
| < 8.9×10^{-4} | 90 | ¹ ALBRECHT | 90B ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ ALBRECHT 90B limit assumes equal production of $B^0 \bar{B}^0$ and $B^+ B^-$ at $\Upsilon(4S)$.NODE=S041R40
NODE=S041R40

NODE=S041R40;LINKAGE=Q

 $\Gamma(\rho^+ \pi^0)/\Gamma_{\text{total}}$ Γ_{376}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|---------------------|----------|------------------------------------|
| 10.9 ± 1.4 OUR AVERAGE | | | | |
| 10.2 ± 1.4 ± 0.9 | | ¹ AUBERT | 07X BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 13.2 ± 2.3 ^{+1.4} _{-1.9} | | ¹ ZHANG | 05A BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|------------------|----|-----------------------|----------|------------------------------------|
| 10.9 ± 1.9 ± 1.9 | | ¹ AUBERT | 04Z BABR | Repl. by AUBERT 07X |
| < 43 | 90 | ^{1,2} JESSOP | 00 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 77 | 90 | ASNER | 96 CLE2 | Repl. by JESSOP 00 |
| < 550 | 90 | ¹ ALBRECHT | 90B ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² Assumes no nonresonant contributions of $B^+ \rightarrow \pi^+ \pi^0 \pi^0$.NODE=S041R41
NODE=S041R41NODE=S041R41;LINKAGE=EP
NODE=S041R41;LINKAGE=JE $\Gamma(\pi^+ \pi^- \pi^+ \pi^0)/\Gamma_{\text{total}}$ Γ_{377}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|------------------------|-----|-----------------------|---------|------------------------------------|
| < 4.0×10^{-3} | 90 | ¹ ALBRECHT | 90B ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ ALBRECHT 90B limit assumes equal production of $B^0 \bar{B}^0$ and $B^+ B^-$ at $\Upsilon(4S)$.NODE=S041R42
NODE=S041R42

NODE=S041R42;LINKAGE=Q

 $\Gamma(\rho^+ \rho^0)/\Gamma_{\text{total}}$ Γ_{378}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|----------------------|----------|------------------------------------|
| 24.0 ± 1.9 OUR AVERAGE | | | | |
| 23.7 ± 1.4 ± 1.4 | | ¹ AUBERT | 09G BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 31.7 ± 7.1 ^{+3.8} _{-6.7} | | ^{1,2} ZHANG | 03B BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|--|----|------------------------|----------|------------------------------------|
| 16.8 ± 2.2 ± 2.3 | | ¹ AUBERT,BE | 06G BABR | Repl. by AUBERT 09G |
| 22.5 ^{+5.7} _{-5.4} ± 5.8 | | ¹ AUBERT | 03V BABR | Repl. by AUBERT,BE 06G |
| < 1000 | 90 | ¹ ALBRECHT | 90B ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² The systematic error includes the error associated with the helicity-mix uncertainty.NODE=S041R43
NODE=S041R43NODE=S041R43;LINKAGE=EP
NODE=S041R43;LINKAGE=ZP $\Gamma(\rho^+ f_0(980) \times B(f_0(980) \rightarrow \pi^+ \pi^-))/\Gamma_{\text{total}}$ Γ_{379}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|----------|------------------------------------|
| <2.0 | 90 | ¹ AUBERT | 09G BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|------|----|------------------------|----------|---------------------|
| <1.9 | 90 | ¹ AUBERT,BE | 06G BABR | Repl. by AUBERT 09G |
|------|----|------------------------|----------|---------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041T18
NODE=S041T18

NODE=S041T18;LINKAGE=EP

$\Gamma(a_1(1260)^+\pi^0)/\Gamma_{\text{total}}$ Γ_{380}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|-----------|-----------------------------------|
| 26.4±5.4±4.1 | | 1,2 AUBERT | 07BL BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R44
 NODE=S041R44

• • • We do not use the following data for averages, fits, limits, etc. • • •

<1700 90 ¹ ALBRECHT 90B ARG $e^+e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Assumes a_1^+ decays only to 3π and $B(a_1^+ \rightarrow \pi^\pm \pi^\mp \pi^+) = 0.5$.

NODE=S041R44;LINKAGE=EP
 NODE=S041R44;LINKAGE=UB

 $\Gamma(a_1(1260)^0\pi^+)/\Gamma_{\text{total}}$ Γ_{381}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|-----------|-----------------------------------|
| 20.4±4.7±3.4 | | 1,2 AUBERT | 07BL BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R45
 NODE=S041R45

• • • We do not use the following data for averages, fits, limits, etc. • • •

<900 90 ¹ ALBRECHT 90B ARG $e^+e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Assumes a_1^0 decays only to 3π and $B(a_1^+ \rightarrow \pi^\pm \pi^\mp \pi^0) = 1.0$.

NODE=S041R45;LINKAGE=EP
 NODE=S041R45;LINKAGE=UB

 $\Gamma(\omega\pi^+)/\Gamma_{\text{total}}$ Γ_{382}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|---------------------|-----------|-----------------------------------|
| 6.9±0.5 OUR AVERAGE | | | | |
| 6.7±0.5±0.4 | | ¹ AUBERT | 07AE BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 6.9±0.6±0.5 | | ¹ JEN | 06 BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 11.3 ^{+3.3} _{-2.9} ±1.4 | | ¹ JESSOP | 00 CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R46
 NODE=S041R46

• • • We do not use the following data for averages, fits, limits, etc. • • •

6.1±0.7±0.4

¹ AUBERT,B 06E BABR Repl. by AUBERT 07AE

5.5±0.9±0.5

¹ AUBERT 04H BABR Repl. by AUBERT,B 06E

5.7^{+1.4}_{-1.3}±0.6

¹ WANG 04A BELL Repl. by JEN 06

4.2^{+2.0}_{-1.8}±0.5

¹ LU 02 BELL Repl. by WANG 04A

6.6^{+2.1}_{-1.8}±0.7

¹ AUBERT 01G BABR Repl. by AUBERT 04H

< 23 90

¹ BERGFELD 98 CLE2 Repl. by JESSOP 00

<400 90

¹ ALBRECHT 90B ARG $e^+e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R46;LINKAGE=EP

 $\Gamma(\omega\rho^+)/\Gamma_{\text{total}}$ Γ_{383}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|----------|-----------------------------------|
| 15.9±1.6±1.4 | | ¹ AUBERT | 09H BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B27
 NODE=S041B27

• • • We do not use the following data for averages, fits, limits, etc. • • •

10.6±2.1^{+1.6}_{-1.0}

¹ AUBERT,B 06T BABR Repl. by AUBERT 09H

12.6^{+3.7}_{-3.3}±1.6

¹ AUBERT 05O BABR Repl. by AUBERT,B 06T

<61 90

¹ BERGFELD 98 CLE2

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B27;LINKAGE=EP

 $\Gamma(\eta\pi^+)/\Gamma_{\text{total}}$ Γ_{384}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|-------------------------------------|-----|-----------------------|-----------|-----------------------------------|
| 4.02±0.27 OUR AVERAGE | | | | |
| 4.07±0.26±0.21 | | ¹ HOI | 12 BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 4.00±0.40±0.24 | | ¹ AUBERT | 09AV BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 1.2 ^{+2.8} _{-1.2} | | ¹ RICHICHI | 00 CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R47
 NODE=S041R47

• • • We do not use the following data for averages, fits, limits, etc. • • •

5.0 ±0.5 ±0.3

¹ AUBERT 07AE BABR Repl. by AUBERT 09AV

4.2 ±0.4 ±0.2

¹ CHANG 07B BELL Repl. by HOI 12

5.1 ±0.6 ±0.3

¹ AUBERT,B 05K BABR Repl. by AUBERT 07AE

4.8 ±0.7 ±0.3

¹ CHANG 05A BELL Repl. by CHANG 07B

5.3 ±1.0 ±0.3

¹ AUBERT 04H BABR Repl. by AUBERT,B 05K

< 15 90

BEHRENS 98 CLE2 Repl. by RICHICHI 00

<700 90

¹ ALBRECHT 90B ARG $e^+e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R47;LINKAGE=EP

$\Gamma(\eta\rho^+)/\Gamma_{\text{total}}$ Γ_{385}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|-----------------------|-----------|-------------------------------------|
| 7.0±2.9 OUR AVERAGE | | | | Error includes scale factor of 2.8. |
| 9.9±1.2±0.8 | | ¹ AUBERT | 08AH BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 4.1 ^{+1.4} _{-1.3} ±0.4 | | ¹ WANG | 07B BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| 8.4±1.9±1.1 | | ¹ AUBERT,B | 05K BABR | Repl. by AUBERT 08AH |
| <14 | 90 | ¹ AUBERT,B | 04D BABR | Repl. by AUBERT,B 05K |
| <15 | 90 | ¹ RICHICHI | 00 CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |
| <32 | 90 | BEHRENS | 98 CLE2 | Repl. by RICHICHI 00 |
| ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. | | | | |

NODE=S041B23
NODE=S041B23

NODE=S041B23;LINKAGE=EP

 $\Gamma(\eta'\pi^+)/\Gamma_{\text{total}}$ Γ_{386}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|------------------------|-----------|-------------------------------------|
| 2.7 ±0.9 OUR AVERAGE | | | | Error includes scale factor of 1.9. |
| 3.5 ±0.6 ±0.2 | | ¹ AUBERT | 09AV BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 1.76 ^{+0.67+0.15} _{-0.62-0.14} | | ¹ SCHUEMANN | 06 BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| 3.9 ±0.7 ±0.3 | | ¹ AUBERT | 07AE BABR | Repl. by AUBERT 09AV |
| 4.0 ±0.8 ±0.4 | | ¹ AUBERT,B | 05K BABR | Repl. by AUBERT 07AE |
| < 4.5 | 90 | ¹ AUBERT | 04H BABR | Repl. by AUBERT,B 05K |
| < 7.0 | 90 | ¹ ABE | 01M BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| <12 | 90 | ¹ AUBERT | 01G BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| <12 | 90 | ¹ RICHICHI | 00 CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |
| <31 | 90 | BEHRENS | 98 CLE2 | Repl. by RICHICHI 00 |
| ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. | | | | |

NODE=S041B18
NODE=S041B18

NODE=S041B18;LINKAGE=EP

 $\Gamma(\eta'\rho^+)/\Gamma_{\text{total}}$ Γ_{387}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|------------------------------|----------|-----------------------------------|
| 9.7^{+1.9}_{-1.8}±1.1 | | ¹ DEL-AMO-SA..10A | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| 8.7 ^{+3.1+2.3} _{-2.8-1.3} | | ¹ AUBERT | 07E BABR | Repl. by DEL-AMO-SANCHEZ 10A |
| < 5.8 | 90 | ¹ SCHUEMANN | 07 BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| <22 | 90 | ¹ AUBERT,B | 04D BABR | Repl. by AUBERT 07E |
| <33 | 90 | ¹ RICHICHI | 00 CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |
| <47 | 90 | BEHRENS | 98 CLE2 | Repl. by RICHICHI 00 |
| ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. | | | | |

NODE=S041B19
NODE=S041B19

NODE=S041B19;LINKAGE=EP

 $\Gamma(\phi\pi^+)/\Gamma_{\text{total}}$ Γ_{388}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|-----------------------|----------|-----------------------------------|
| < 0.24 | 90 | ¹ AUBERT,B | 06C BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| < 0.33 | 90 | ¹ KIM | 12A BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| < 0.41 | 90 | ¹ AUBERT | 04A BABR | Repl. by AUBERT,B 06C |
| < 1.4 | 90 | ¹ AUBERT | 01D BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| <153 | 90 | ² ABE | 00C SLD | $e^+e^- \rightarrow Z$ |
| < 5 | 90 | ¹ BERGFELD | 98 CLE2 | |
| ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. | | | | |
| ² ABE 00C assumes $B(Z \rightarrow b\bar{b})=(21.7 \pm 0.1)\%$ and the B fractions $f_{B^0}=f_{B^+}=(39.7^{+1.8}_{-2.2})\%$ and $f_{B_s}=(10.5^{+1.8}_{-2.2})\%$. | | | | |

NODE=S041B28
NODE=S041B28

NODE=S041B28;LINKAGE=EP

NODE=S041B28;LINKAGE=KQ

 $\Gamma(\phi\rho^+)/\Gamma_{\text{total}}$ Γ_{389}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|-----------------------|-----------|-----------------------------------|
| < 3.0 | 90 | ¹ AUBERT | 08BK BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| <16 | | ¹ BERGFELD | 98 CLE2 | |
| ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. | | | | |

NODE=S041B29
NODE=S041B29

NODE=S041B29;LINKAGE=EP

$$\Gamma(a_0(980)^0 \pi^+ \times B(a_0(980)^0 \rightarrow \eta \pi^0)) / \Gamma_{\text{total}} \quad \Gamma_{390} / \Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|------|----|-------------|---------|------------------------------------|
| <5.8 | 90 | 1 AUBERT,BE | 04 BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------|----|-------------|---------|------------------------------------|

¹ Assumes equal production of charged and neutral B mesons from $\Upsilon(4S)$ decays.

NODE=S041RA4
NODE=S041RA4

NODE=S041RA4;LINKAGE=EP

$$\Gamma(a_0(980)^+ \pi^0 \times B(a_0^+ \rightarrow \eta \pi^+)) / \Gamma_{\text{total}} \quad \Gamma_{391} / \Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|------|----|----------|----------|------------------------------------|
| <1.4 | 90 | 1 AUBERT | 08A BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------|----|----------|----------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T24
NODE=S041T24

NODE=S041T24;LINKAGE=EP

$$\Gamma(\pi^+ \pi^+ \pi^+ \pi^- \pi^-) / \Gamma_{\text{total}} \quad \Gamma_{392} / \Gamma$$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

| | | | | |
|-----------------------|----|------------|---------|------------------------------------|
| <8.6 $\times 10^{-4}$ | 90 | 1 ALBRECHT | 90B ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|----|------------|---------|------------------------------------|

¹ ALBRECHT 90B limit assumes equal production of $B^0 \bar{B}^0$ and $B^+ B^-$ at $\Upsilon(4S)$.

NODE=S041R48
NODE=S041R48

NODE=S041R48;LINKAGE=Q

$$\Gamma(\rho^0 a_1(1260)^+) / \Gamma_{\text{total}} \quad \Gamma_{393} / \Gamma$$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

| | | | | |
|-----------------------|----|----------------|------|------------------------------------|
| <6.2 $\times 10^{-4}$ | 90 | 1 BORTOLETTO89 | CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|----|----------------|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-----------------------|----|------------|---------|------------------------------------|
| <6.0 $\times 10^{-4}$ | 90 | 2 ALBRECHT | 90B ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|----|------------|---------|------------------------------------|

| | | | | |
|-----------------------|----|---------|---------|------------------------------------|
| <3.2 $\times 10^{-3}$ | 90 | 1 BEBEK | 87 CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|----|---------|---------|------------------------------------|

¹ BORTOLETTO 89 reports < 5.4 $\times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \bar{B}^0$. We rescale to 50%.

² ALBRECHT 90B limit assumes equal production of $B^0 \bar{B}^0$ and $B^+ B^-$ at $\Upsilon(4S)$.

NODE=S041R17
NODE=S041R17

NODE=S041R17;LINKAGE=A1

NODE=S041R17;LINKAGE=Q

$$\Gamma(\rho^0 a_2(1320)^+) / \Gamma_{\text{total}} \quad \Gamma_{394} / \Gamma$$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

| | | | | |
|-----------------------|----|----------------|------|------------------------------------|
| <7.2 $\times 10^{-4}$ | 90 | 1 BORTOLETTO89 | CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|----|----------------|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-----------------------|----|---------|---------|------------------------------------|
| <2.6 $\times 10^{-3}$ | 90 | 2 BEBEK | 87 CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|----|---------|---------|------------------------------------|

¹ BORTOLETTO 89 reports < 6.3 $\times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \bar{B}^0$. We rescale to 50%.

² BEBEK 87 reports < 2.3 $\times 10^{-3}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \bar{B}^0$. We rescale to 50%.

NODE=S041R18
NODE=S041R18

NODE=S041R18;LINKAGE=A1

NODE=S041R18;LINKAGE=B

$$\Gamma(b_1^0 \pi^+ \times B(b_1^0 \rightarrow \omega \pi^0)) / \Gamma_{\text{total}} \quad \Gamma_{395} / \Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|-----------------------|--|----------|-----------|------------------------------------|
| 6.7 $\pm 1.7 \pm 1.0$ | | 1 AUBERT | 07BI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|--|----------|-----------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T27
NODE=S041T27

NODE=S041T27;LINKAGE=EP

$$\Gamma(b_1^+ \pi^0 \times B(b_1^+ \rightarrow \omega \pi^+)) / \Gamma_{\text{total}} \quad \Gamma_{396} / \Gamma$$

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|------|----|----------|-----------|------------------------------------|
| <3.3 | 90 | 1 AUBERT | 08AG BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------|----|----------|-----------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T35
NODE=S041T35

NODE=S041T35;LINKAGE=EP

$$\Gamma(\pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^0) / \Gamma_{\text{total}} \quad \Gamma_{397} / \Gamma$$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

| | | | | |
|-----------------------|----|------------|---------|------------------------------------|
| <6.3 $\times 10^{-3}$ | 90 | 1 ALBRECHT | 90B ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|----|------------|---------|------------------------------------|

¹ ALBRECHT 90B limit assumes equal production of $B^0 \bar{B}^0$ and $B^+ B^-$ at $\Upsilon(4S)$.

NODE=S041R50
NODE=S041R50

NODE=S041R50;LINKAGE=Q

$$\Gamma(b_1^+ \rho^0 \times B(b_1^+ \rightarrow \omega \pi^+)) / \Gamma_{\text{total}} \quad \Gamma_{398} / \Gamma$$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

| | | | | |
|-----------------------|----|----------|-----------|------------------------------------|
| <5.2 $\times 10^{-6}$ | 90 | 1 AUBERT | 09AF BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|----|----------|-----------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T58
NODE=S041T58

NODE=S041T58;LINKAGE=EP

$$\Gamma(b_1^0 \rho^+ \times B(b_1^0 \rightarrow \omega \pi^0)) / \Gamma_{\text{total}} \quad \Gamma_{400} / \Gamma$$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

| | | | | |
|-----------------------|----|----------|-----------|------------------------------------|
| <3.3 $\times 10^{-6}$ | 90 | 1 AUBERT | 09AF BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|----|----------|-----------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T59
NODE=S041T59

NODE=S041T59;LINKAGE=EP

$\Gamma(a_1(1260)^+ a_1(1260)^0)/\Gamma_{\text{total}}$ Γ_{399}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

| | | | | |
|-----------------------|----|-----------------------|---------|------------------------------------|
| $<1.3 \times 10^{-2}$ | 90 | ¹ ALBRECHT | 90B ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|----|-----------------------|---------|------------------------------------|

¹ ALBRECHT 90B limit assumes equal production of $B^0 \bar{B}^0$ and $B^+ B^-$ at $\Upsilon(4S)$.

NODE=S041R51
NODE=S041R51

NODE=S041R51;LINKAGE=Q

 $\Gamma(h^+ \pi^0)/\Gamma_{\text{total}}$ Γ_{401}/Γ $h^+ = K^+ \text{ or } \pi^+$

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

| | | | |
|------------------------|--------|---------|------------------------------------|
| $16_{-5}^{+6} \pm 3.6$ | GODANG | 98 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------------------------|--------|---------|------------------------------------|

NODE=S041B17
NODE=S041B17
NODE=S041B17

 $\Gamma(\omega h^+)/\Gamma_{\text{total}}$ Γ_{402}/Γ $h^+ = K^+ \text{ or } \pi^+$

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

13.8 $_{-2.4}^{+2.7}$ OUR AVERAGE

| | | | |
|------------------------------|-----------------|---------|------------------------------------|
| $13.4_{-2.9}^{+3.3} \pm 1.1$ | ¹ LU | 02 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------------------------------|-----------------|---------|------------------------------------|

| | | | |
|------------------------------|---------------------|---------|------------------------------------|
| $14.3_{-3.2}^{+3.6} \pm 2.0$ | ¹ JESSOP | 00 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------------------------------|---------------------|---------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|----------------------|-----------------------|---------|--------------------|
| $25_{-7}^{+8} \pm 3$ | ¹ BERGFELD | 98 CLE2 | Repl. by JESSOP 00 |
|----------------------|-----------------------|---------|--------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B30
NODE=S041B30
NODE=S041B30

NODE=S041B30;LINKAGE=EP

 $\Gamma(h^+ X^0(\text{Familon}))/\Gamma_{\text{total}}$ Γ_{403}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|-------|----|--------------------|----------|------------------------------------|
| <49 | 90 | ¹ AMMAR | 01B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------|----|--------------------|----------|------------------------------------|

¹ AMMAR 01B searched for the two-body decay of the B meson to a massless neutral feebly-interacting particle X^0 such as the familon, the Nambu-Goldstone boson associated with a spontaneously broken global family symmetry.

NODE=S041B56
NODE=S041B56

NODE=S041B56;LINKAGE=A

 $\Gamma(p\bar{p}\pi^+)/\Gamma_{\text{total}}$ Γ_{404}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

1.62 \pm 0.20 OUR AVERAGE

| | | | |
|---------------------------------|----------------------|---------|------------------------------------|
| $1.60_{-0.19}^{+0.22} \pm 0.12$ | ^{1,2,3} WEI | 08 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---------------------------------|----------------------|---------|------------------------------------|

| | | | |
|--------------------------|---------------------|-----------|------------------------------------|
| $1.69 \pm 0.29 \pm 0.26$ | ¹ AUBERT | 07AV BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------------|---------------------|-----------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|---------------------------------|---------------------|---------|-----------------|
| $3.06_{-0.62}^{+0.73} \pm 0.37$ | ^{1,3} WANG | 04 BELL | Repl. by WEI 08 |
|---------------------------------|---------------------|---------|-----------------|

| | | | | |
|---------|----|--------------------|----------|------------------|
| < 3.7 | 90 | ^{1,2} ABE | 02K BELL | Repl. by WANG 04 |
|---------|----|--------------------|----------|------------------|

| | | | | |
|---------|----|--------------------|----------|-------------------|
| < 500 | 90 | ⁴ ABREU | 95N DLPH | Repl. by ADAM 96D |
|---------|----|--------------------|----------|-------------------|

| | | | | |
|---------|----|--------------------|---------|------------------------------------|
| < 160 | 90 | ⁵ BEBEK | 89 CLEO | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---------|----|--------------------|---------|------------------------------------|

| | | | |
|-----------------------|-----------------------|---------|------------------------------------|
| $570 \pm 150 \pm 210$ | ⁶ ALBRECHT | 88F ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|-----------------------|---------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Explicitly vetoes resonant production of $p\bar{p}$ from Charmonium states.

³ Also provides results with $m_{p\bar{p}} < 2.85 \text{ GeV}/c^2$ and angular asymmetry of $p\bar{p}$ system.

⁴ Assumes a B^0 , B^- production fraction of 0.39 and a B_S production fraction of 0.12.

⁵ BEBEK 89 reports $< 1.4 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \bar{B}^0$. We rescale to 50%.

⁶ ALBRECHT 88F reports $(5.2 \pm 1.4 \pm 1.9) \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 45% to $B^0 \bar{B}^0$. We rescale to 50%.

NODE=S041R21
NODE=S041R21

NODE=S041R21;LINKAGE=EP
NODE=S041R21;LINKAGE=EZ
NODE=S041R21;LINKAGE=WN
NODE=S041R21;LINKAGE=SR
NODE=S041R21;LINKAGE=A1

NODE=S041R21;LINKAGE=B

 $\Gamma(p\bar{p}\pi^+ \text{ nonresonant})/\Gamma_{\text{total}}$ Γ_{405}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|-------|----|----------|----------|------------------------------------|
| <53 | 90 | BERGFELD | 96B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------|----|----------|----------|------------------------------------|

NODE=S041B6
NODE=S041B6

 $\Gamma(p\bar{p}\pi^+ \pi^+ \pi^-)/\Gamma_{\text{total}}$ Γ_{406}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

| | | | | |
|------------------------|----|-----------------------|---------|------------------------------------|
| $< 5.2 \times 10^{-4}$ | 90 | ¹ ALBRECHT | 88F ARG | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------------------------|----|-----------------------|---------|------------------------------------|

¹ ALBRECHT 88F reports $< 4.7 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 45% to $B^0 \bar{B}^0$. We rescale to 50%.

NODE=S041R22
NODE=S041R22

• • • We do not use the following data for averages, fits, limits, etc. • • •

NODE=S041R22;LINKAGE=B

$\Gamma(p\bar{p}K^+)/\Gamma_{\text{total}}$ Γ_{407}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|---|-------------------------------------|----------|-----------------------------------|
| 5.9 ±0.5 OUR AVERAGE | Error includes scale factor of 1.5. | | |
| 5.54 ^{+0.27} _{-0.25} ±0.36 | 1,2,3 WEI | 08 BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 6.7 ±0.5 ±0.4 | 1,3 AUBERT,B | 05L BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | |
| 4.59 ^{+0.38} _{-0.34} ±0.50 | 1,2,3 WANG | 05A BELL | Repl. by WEI 08 |
| 5.66 ^{+0.67} _{-0.57} ±0.62 | 1,2,3 WANG | 04 BELL | Repl. by WANG 05A |
| 4.3 ^{+1.1} _{-0.9} ±0.5 | 1,2 ABE | 02K BELL | Repl. by WANG 04 |

NODE=S041B90
 NODE=S041B90

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Explicitly vetoes resonant production of $p\bar{p}$ from Charmonium states.

³ Provides also results with $m_{p\bar{p}} < 2.85 \text{ GeV}/c^2$ and angular asymmetry of $p\bar{p}$ system.

NODE=S041B90;LINKAGE=EP
 NODE=S041B90;LINKAGE=EZ
 NODE=S041B90;LINKAGE=WN

 $\Gamma(\Theta(1710)^{++}\bar{p} \times B(\Theta(1710)^{++} \rightarrow pK^+))/\Gamma_{\text{total}}$ Γ_{408}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|--------------|----------|-----------------------------------|
| <0.091 | 90 | 1 WANG | 05A BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| <0.1 | 90 | 1,2 AUBERT,B | 05L BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q50
 NODE=S041Q50

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Provides upper limits depending on the pentaquark masses between 1.43 to 2.0 GeV/c^2 .

NODE=S041Q50;LINKAGE=EP
 NODE=S041Q50;LINKAGE=AU

 $\Gamma(f_J(2220)K^+ \times B(f_J(2220) \rightarrow p\bar{p}))/\Gamma_{\text{total}}$ Γ_{409}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|-------------|----------|-----------------------------------|
| <0.41 | 90 | 1 WANG | 05A BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. | | | | |

NODE=S041Q51
 NODE=S041Q51

NODE=S041Q51;LINKAGE=EP

 $\Gamma(p\bar{\Lambda}(1520))/\Gamma_{\text{total}}$ Γ_{410}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|-------------|----------|-----------------------------------|
| <1.5 | 90 | 1 AUBERT,B | 05L BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$. | | | | |

NODE=S041Q46
 NODE=S041Q46

NODE=S041Q46;LINKAGE=EP

 $\Gamma(p\bar{p}K^+ \text{ nonresonant})/\Gamma_{\text{total}}$ Γ_{411}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|----------|-----------------------------------|
| <89 | 90 | BERGFELD | 96B CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B7
 NODE=S041B7

 $\Gamma(p\bar{p}K^*(892)^+)/\Gamma_{\text{total}}$ Γ_{412}/Γ

| VALUE (units 10^{-6}) | DOCUMENT ID | TECN | COMMENT |
|---|-------------|-----------|-----------------------------------|
| 3.6^{+0.8}_{-0.7} OUR AVERAGE | | | |
| 3.38 ^{+0.73} _{-0.60} ±0.39 | 1,2 CHEN | 08C BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 5.3 ±1.5 ±1.3 | 2 AUBERT | 07AV BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | |
| 10.3 ^{+3.6} _{-2.8} ^{+1.3} _{-1.7} | 2,3 WANG | 04 BELL | Repl. by CHEN 08C |

NODE=S041Q07
 NODE=S041Q07

¹ Explicitly vetoes resonant production of $p\bar{p}$ from charmonium states.

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

³ Explicitly vetoes resonant production of $p\bar{p}$ from charmonium states. The branching fraction for $M_{p\bar{p}} < 2.85 \text{ GeV}/c^2$ is also reported.

NODE=S041Q07;LINKAGE=CH
 NODE=S041Q07;LINKAGE=EP
 NODE=S041Q07;LINKAGE=WN

 $\Gamma(f_J(2220)K^{*+} \times B(f_J(2220) \Rightarrow p\bar{p}))/\Gamma_{\text{total}}$ Γ_{413}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|-----------|-----------------------------------|
| <0.77 | 90 | 1 AUBERT | 07AV BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q97
 NODE=S041Q97

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q97;LINKAGE=EP

$\Gamma(p\bar{\lambda})/\Gamma_{\text{total}}$ Γ_{414}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|-----------------------|------|--|
| < 0.32 | 90 | ¹ TSAI | 07 | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| < 0.49 | 90 | ¹ CHANG | 05 | BELL Repl. by TSAI 07 |
| < 1.5 | 90 | ¹ BORNHEIM | 03 | CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ |
| < 2.2 | 90 | ¹ ABE | 020 | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |
| < 2.6 | 90 | ¹ COAN | 99 | CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ |
| < 60 | 90 | ² AVERY | 89B | CLEO $e^+e^- \rightarrow \Upsilon(4S)$ |
| < 93 | 90 | ³ ALBRECHT | 88F | ARG $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² AVERY 89B reports $< 5 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\bar{B}^0$. We rescale to 50%.

³ ALBRECHT 88F reports $< 8.5 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 45% to $B^0\bar{B}^0$. We rescale to 50%.

NODE=S041R23
NODE=S041R23

NODE=S041R23;LINKAGE=EP
NODE=S041R23;LINKAGE=A1

NODE=S041R23;LINKAGE=B

 $\Gamma(p\bar{\lambda}\gamma)/\Gamma_{\text{total}}$ Γ_{415}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|----------------------|------|--|
| $2.45^{+0.44}_{-0.38} \pm 0.22$ | | ¹ WANG | 07C | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $2.16^{+0.58}_{-0.53} \pm 0.20$ | | ¹ LEE | 05 | BELL Repl. by WANG 07C |
| < 3.9 | 90 | ² EDWARDS | 03 | CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Corresponds to $E_\gamma > 1.5$ GeV. The limit changes to 3.3×10^{-6} for $E_\gamma > 2.0$ GeV.

NODE=S041B99
NODE=S041B99

NODE=S041B99;LINKAGE=EP
NODE=S041B99;LINKAGE=A

 $\Gamma(p\bar{\lambda}\pi^0)/\Gamma_{\text{total}}$ Γ_{416}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|-----|-------------------|------|--|
| $3.00^{+0.61}_{-0.53} \pm 0.33$ | | ¹ WANG | 07C | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T30
NODE=S041T30

NODE=S041T30;LINKAGE=EP

 $\Gamma(p\bar{\Sigma}(1385)^0)/\Gamma_{\text{total}}$ Γ_{417}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------------|------|--|
| < 0.47 | 90 | ¹ WANG | 07C | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T31
NODE=S041T31

NODE=S041T31;LINKAGE=EP

 $\Gamma(\Delta^+\bar{\lambda})/\Gamma_{\text{total}}$ Γ_{418}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------------|------|--|
| < 0.82 | 90 | ¹ WANG | 07C | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T32
NODE=S041T32

NODE=S041T32;LINKAGE=EP

 $\Gamma(p\bar{\Sigma}\gamma)/\Gamma_{\text{total}}$ Γ_{419}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|----------------------|------|--|
| < 4.6 | 90 | ¹ LEE | 05 | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| < 7.9 | 90 | ² EDWARDS | 03 | CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Corresponds to $E_\gamma > 1.5$ GeV. The limit changes to 6.4×10^{-6} for $E_\gamma > 2.0$ GeV.

NODE=S041B00
NODE=S041B00

NODE=S041B00;LINKAGE=EP
NODE=S041B00;LINKAGE=A

 $\Gamma(p\bar{\lambda}\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{420}/Γ

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|-----|-------------------|------|--|
| $5.92^{+0.88}_{-0.84} \pm 0.69$ | | ¹ CHEN | 09C | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

< 200 90 ² ALBRECHT 88F ARG $e^+e^- \rightarrow \Upsilon(4S)$

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² ALBRECHT 88F reports $< 1.8 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 45% to $B^0\bar{B}^0$. We rescale to 50%.

NODE=S041R24
NODE=S041R24

NODE=S041R24;LINKAGE=EP
NODE=S041R24;LINKAGE=B

$\Gamma(\rho\bar{\lambda}\rho^0)/\Gamma_{\text{total}}$ Γ_{421}/Γ VALUE (units 10^{-6})

DOCUMENT ID

TECN

COMMENT

NODE=S041T60
NODE=S041T60 $4.78^{+0.67}_{-0.64} \pm 0.60$ ¹ CHEN 09C BELL $e^+e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T60;LINKAGE=EP

 $\Gamma(\rho\bar{\lambda}f_2(1270))/\Gamma_{\text{total}}$ Γ_{422}/Γ VALUE (units 10^{-6})

DOCUMENT ID

TECN

COMMENT

NODE=S041T61
NODE=S041T61 $2.03^{+0.77}_{-0.72} \pm 0.27$ ¹ CHEN 09C BELL $e^+e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T61;LINKAGE=EP

 $\Gamma(\Lambda\bar{\lambda}\pi^+)/\Gamma_{\text{total}}$ Γ_{423}/Γ VALUE (units 10^{-6})

CL%

DOCUMENT ID

TECN

COMMENT

NODE=S041Q10
NODE=S041Q10

< 0.94

90

^{1,2} CHANG 09 BELL Repl. by CHANG 09

• • • We do not use the following data for averages, fits, limits, etc. • • •

< 2.8

90

² LEE 04 BELL $e^+e^- \rightarrow \Upsilon(4S)$ ¹ For $m_{\Lambda\bar{\lambda}} < 2.85 \text{ GeV}/c^2$.² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.NODE=S041Q10;LINKAGE=CH
NODE=S041Q10;LINKAGE=EP $\Gamma(\Lambda\bar{\lambda}K^+)/\Gamma_{\text{total}}$ Γ_{424}/Γ VALUE (units 10^{-6})

DOCUMENT ID

TECN

COMMENT

NODE=S041Q11
NODE=S041Q11 $3.38^{+0.41}_{-0.36} \pm 0.41$ ^{1,2} CHANG 09 BELL $e^+e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

 $2.91^{+0.9}_{-0.70} \pm 0.38$ ² LEE 04 BELL Repl. by CHANG 09¹ Excluding charmonium events in $2.85 < m_{\Lambda\bar{\lambda}} < 3.128 \text{ GeV}/c^2$ and $3.315 < m_{\Lambda\bar{\lambda}} < 3.735 \text{ GeV}/c^2$. Measurements in various $m_{\Lambda\bar{\lambda}}$ bins are also reported.² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041Q11;LINKAGE=CH

NODE=S041Q11;LINKAGE=EP

 $\Gamma(\Lambda\bar{\lambda}K^{*+})/\Gamma_{\text{total}}$ Γ_{425}/Γ VALUE (units 10^{-6})

DOCUMENT ID

TECN

COMMENT

NODE=S041C61
NODE=S041C61 $2.19^{+1.13}_{-0.88} \pm 0.33$ ^{1,2} CHANG 09 BELL $e^+e^- \rightarrow \Upsilon(4S)$ ¹ For $m_{\Lambda\bar{\lambda}} < 2.85 \text{ GeV}/c^2$.² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C61;LINKAGE=CH

NODE=S041C61;LINKAGE=EP

 $\Gamma(\bar{\Delta}^0\rho)/\Gamma_{\text{total}}$ Γ_{426}/Γ VALUE (units 10^{-6})

CL%

DOCUMENT ID

TECN

COMMENT

NODE=S041R37
NODE=S041R37

< 1.38

90

¹ WEI 08 BELL $e^+e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

< 380

90

² BORTOLETTO89 CLEO $e^+e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² BORTOLETTO 89 reports $< 3.3 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\bar{B}^0$. We rescale to 50%.

NODE=S041R37;LINKAGE=EP

NODE=S041R37;LINKAGE=A1

 $\Gamma(\Delta^{++}\bar{p})/\Gamma_{\text{total}}$ Γ_{427}/Γ VALUE (units 10^{-6})

CL%

DOCUMENT ID

TECN

COMMENT

NODE=S041R38
NODE=S041R38

< 0.14

90

¹ WEI 08 BELL $e^+e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

< 150

90

² BORTOLETTO89 CLEO $e^+e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² BORTOLETTO 89 reports $< 1.3 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0\bar{B}^0$. We rescale to 50%.

NODE=S041R38;LINKAGE=EP

NODE=S041R38;LINKAGE=A1

 $\Gamma(D^+p\bar{p})/\Gamma_{\text{total}}$ Γ_{428}/Γ

VALUE

CL%

DOCUMENT ID

TECN

COMMENT

NODE=S041B80
NODE=S041B80< 1.5×10^{-5}

90

¹ ABE 02W BELL $e^+e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B80;LINKAGE=EP

$\Gamma(D^*(2010)^+ p\bar{p})/\Gamma_{\text{total}}$ Γ_{429}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-----------------------|-----|-------------|----------|------------------------------------|
| $<1.5 \times 10^{-5}$ | 90 | 1 ABE | 02W BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B81
 NODE=S041B81

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B81;LINKAGE=EP

 $\Gamma(\bar{D}^0 p\bar{p}\pi^+)/\Gamma_{\text{total}}$ Γ_{430}/Γ

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|--------------------|------|------------------------------------|
| $3.72 \pm 0.11 \pm 0.25$ | 1,2 DEL-AMO-SA..12 | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C22
 NODE=S041C22

¹ Uses the values of D and D^* branching fractions from PDG 08.

NODE=S041C22;LINKAGE=DA

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C22;LINKAGE=EP

 $\Gamma(\bar{D}^{*0} p\bar{p}\pi^+)/\Gamma_{\text{total}}$ Γ_{431}/Γ

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|--------------------|------|------------------------------------|
| $3.73 \pm 0.17 \pm 0.27$ | 1,2 DEL-AMO-SA..12 | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C23
 NODE=S041C23

¹ Uses the values of D and D^* branching fractions from PDG 08.

NODE=S041C23;LINKAGE=DA

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C23;LINKAGE=EP

 $\Gamma(D^- p\bar{p}\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{432}/Γ

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|--------------------|------|------------------------------------|
| $1.66 \pm 0.13 \pm 0.27$ | 1,2 DEL-AMO-SA..12 | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C24
 NODE=S041C24

¹ Uses the values of D and D^* branching fractions from PDG 08.

NODE=S041C24;LINKAGE=DA

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C24;LINKAGE=EP

 $\Gamma(D^{*-} p\bar{p}\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{433}/Γ

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|--------------------|------|------------------------------------|
| $1.86 \pm 0.16 \pm 0.19$ | 1,2 DEL-AMO-SA..12 | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C25
 NODE=S041C25

¹ Uses the values of D and D^* branching fractions from PDG 08.

NODE=S041C25;LINKAGE=DA

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C25;LINKAGE=EP

 $\Gamma(p\bar{\Lambda}^0 \bar{D}^0)/\Gamma_{\text{total}}$ Γ_{434}/Γ

| VALUE (units 10^{-5}) | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|-------------|----------|------------------------------------|
| $1.43^{+0.28}_{-0.25} \pm 0.18$ | 1,2 CHEN | 11F BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041T72
 NODE=S041T72

¹ Uses $B(\Lambda \rightarrow p\pi^-) = 63.9 \pm 0.5\%$, $B(D^0 \rightarrow K^-\pi^+) = 3.89 \pm 0.05\%$, and $B(D^0 \rightarrow K^-\pi^+\pi^0) = 13.9 \pm 0.5\%$.

NODE=S041T72;LINKAGE=CH

² Assumes equal production of B^0 and B^+ from Upsilon(4S) decays.

NODE=S041T72;LINKAGE=EP

 $\Gamma(p\bar{\Lambda}^0 \bar{D}^*(2007)^0)/\Gamma_{\text{total}}$ Γ_{435}/Γ

| VALUE (units 10^{-5}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|----------|------------------------------------|
| <5 | 90 | 1,2,3 CHEN | 11F BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041T73
 NODE=S041T73

¹ CHEN 11F reports $< 4.8 \times 10^{-5}$ from a measurement of $[\Gamma(B^+ \rightarrow p\bar{\Lambda}^0 \bar{D}^*(2007)^0)/\Gamma_{\text{total}}] / [B(D^*(2007)^0 \rightarrow D^0\pi^0)]$ assuming $B(D^*(2007)^0 \rightarrow D^0\pi^0) = (61.9 \pm 2.9) \times 10^{-2}$.

NODE=S041T73;LINKAGE=CE

² Uses $B(\Lambda \rightarrow p\pi^-) = 63.9 \pm 0.5\%$ and $B(D^0 \rightarrow K^-\pi^+) = 3.89 \pm 0.05\%$.

NODE=S041T73;LINKAGE=CH

³ Assumes equal production of B^0 and B^+ from Upsilon(4S) decays.

NODE=S041T73;LINKAGE=EP

 $\Gamma(\bar{\Lambda}_c^- p\pi^+)/\Gamma_{\text{total}}$ Γ_{436}/Γ

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-------------|------|---------|
| 2.8 ± 0.8 OUR AVERAGE | | | |

NODE=S041B14
 NODE=S041B14

3.4 ± 0.1 ± 0.9 1,2 AUBERT 08BN BABR $e^+ e^- \rightarrow \Upsilon(4S)$

2.0 ± 0.3 ± 0.5 1,3 GABYSHEV 06A BELL $e^+ e^- \rightarrow \Upsilon(4S)$

2.4 ± 0.6 ± 0.6 1,4 DYTMAN 02 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

1.9 ± 0.5 ± 0.5 1,5 GABYSHEV 02 BELL Repl. by GABYSHEV 06A

6.2 $^{+2.3}_{-2.0} \pm 1.6$ 1,6 FU 97 CLE2 Repl. by DYTMAN 02

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B14;LINKAGE=EP

² AUBERT 08BN reports $(3.4 \pm 0.1 \pm 0.9) \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{\Lambda}_c^- p\pi^+)/\Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow pK^-\pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow pK^-\pi^+) = (5.0 \pm 1.3) \times 10^{-2}$.

NODE=S041B14;LINKAGE=UB

³ GABYSHEV 06A reports $(2.01 \pm 0.15 \pm 0.20) \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{\Lambda}_c^- p\pi^+)/\Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow pK^-\pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow pK^-\pi^+) = 0.05$, which

NODE=S041B14;LINKAGE=GA

we rescale to our best value $B(\Lambda_c^+ \rightarrow \rho K^- \pi^+) = (5.0 \pm 1.3) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

⁴ DYTMAN 02 reports $(2.4_{-0.62}^{+0.63}) \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{\Lambda}_c^- \rho \pi^+)/\Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow \rho K^- \pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow \rho K^- \pi^+) = 0.05$, which we rescale to our best value $B(\Lambda_c^+ \rightarrow \rho K^- \pi^+) = (5.0 \pm 1.3) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

⁵ GABYSHEV 02 reports $(1.87_{-0.49}^{+0.51}) \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{\Lambda}_c^- \rho \pi^+)/\Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow \rho K^- \pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow \rho K^- \pi^+) = 0.05$, which we rescale to our best value $B(\Lambda_c^+ \rightarrow \rho K^- \pi^+) = (5.0 \pm 1.3) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

⁶ FU 97 uses PDG 96 values of Λ_c branching fraction.

NODE=S041B14;LINKAGE=B9

NODE=S041B14;LINKAGE=G9

NODE=S041B14;LINKAGE=A

| $\Gamma(\bar{\Lambda}_c^- \Delta(1232)^{++})/\Gamma_{\text{total}}$ | | | | | Γ_{437}/Γ |
|---|-----|-------------|------|---------|------------------------------------|
| VALUE (units 10^{-5}) | CL% | DOCUMENT ID | TECN | COMMENT | |
| <1.9 | 90 | GABYSHEV | 06A | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R06
NODE=S041R06

| $\Gamma(\bar{\Lambda}_c^- \Delta_X(1600)^{++})/\Gamma_{\text{total}}$ | | | | | Γ_{438}/Γ |
|---|--|-----------------------|------|---------|------------------------------------|
| VALUE (units 10^{-5}) | | DOCUMENT ID | TECN | COMMENT | |
| $5.9 \pm 1.2 \pm 1.5$ | | ¹ GABYSHEV | 06A | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R07
NODE=S041R07

¹ GABYSHEV 06A reports $(5.9 \pm 1.0 \pm 0.6) \times 10^{-5}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{\Lambda}_c^- \Delta_X(1600)^{++})/\Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow \rho K^- \pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow \rho K^- \pi^+) = 0.05$, which we rescale to our best value $B(\Lambda_c^+ \rightarrow \rho K^- \pi^+) = (5.0 \pm 1.3) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041R07;LINKAGE=GA

| $\Gamma(\bar{\Lambda}_c^- \Delta_X(2420)^{++})/\Gamma_{\text{total}}$ | | | | | Γ_{439}/Γ |
|---|--|-----------------------|------|---------|------------------------------------|
| VALUE (units 10^{-5}) | | DOCUMENT ID | TECN | COMMENT | |
| $4.7_{-1.0}^{+1.1} \pm 1.2$ | | ¹ GABYSHEV | 06A | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R08
NODE=S041R08

¹ GABYSHEV 06A reports $(4.7_{-0.9}^{+1.0} \pm 0.4) \times 10^{-5}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{\Lambda}_c^- \Delta_X(2420)^{++})/\Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow \rho K^- \pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow \rho K^- \pi^+) = 0.05$, which we rescale to our best value $B(\Lambda_c^+ \rightarrow \rho K^- \pi^+) = (5.0 \pm 1.3) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041R08;LINKAGE=GA

| $\Gamma((\bar{\Lambda}_c^- \rho)_s \pi^+)/\Gamma_{\text{total}}$ | | | | | Γ_{440}/Γ |
|--|--|-----------------------|------|---------|------------------------------------|
| VALUE (units 10^{-5}) | | DOCUMENT ID | TECN | COMMENT | |
| $3.9_{-0.8}^{+0.9} \pm 1.0$ | | ¹ GABYSHEV | 06A | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R09
NODE=S041R09
NODE=S041R09

¹ GABYSHEV 06A reports $(3.9_{-0.7}^{+0.8} \pm 0.4) \times 10^{-5}$ from a measurement of $[\Gamma(B^+ \rightarrow (\bar{\Lambda}_c^- \rho)_s \pi^+)/\Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow \rho K^- \pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow \rho K^- \pi^+) = 0.05$, which we rescale to our best value $B(\Lambda_c^+ \rightarrow \rho K^- \pi^+) = (5.0 \pm 1.3) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041R09;LINKAGE=GA

| $\Gamma(\bar{\Sigma}_c(2520)^0 \rho)/\Gamma_{\text{total}}$ | | | | | Γ_{441}/Γ |
|---|-----|---|------|---------|------------------------------------|
| VALUE (units 10^{-5}) | CL% | DOCUMENT ID | TECN | COMMENT | |
| <0.3 | 90 | ^{1,2} AUBERT | 08BN | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| ••• | | We do not use the following data for averages, fits, limits, etc. ••• | | | |
| <2.7 | 90 | ^{1,2} GABYSHEV | 06A | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| <4.6 | 90 | ^{1,2} GABYSHEV | 02 | BELL | Repl. by GABYSHEV 06A |

NODE=S041B89
NODE=S041B89

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Uses the value for $\Lambda_c \rightarrow \rho K^- \pi^+$ branching ratio $(5.0 \pm 1.3)\%$.

NODE=S041B89;LINKAGE=EP
NODE=S041B89;LINKAGE=GB

| $\Gamma(\bar{\Sigma}_c(2520)^0 \rho)/\Gamma(\bar{\Lambda}_c^- \rho \pi^+)$ | | | | | $\Gamma_{441}/\Gamma_{436}$ |
|--|-----|-------------|------|---------|------------------------------------|
| VALUE (units 10^{-3}) | CL% | DOCUMENT ID | TECN | COMMENT | |
| <9 | 90 | AUBERT | 08BN | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C49
NODE=S041C49

$\Gamma(\bar{\Sigma}_c(2800)^0 p)/\Gamma_{\text{total}}$ Γ_{442}/Γ VALUE (units 10^{-5})

DOCUMENT ID TECN COMMENT

3.3±0.9±0.91 AUBERT 08BN BABR $e^+ e^- \rightarrow \Upsilon(4S)$

¹AUBERT 08BN reports $[\Gamma(B^+ \rightarrow \bar{\Sigma}_c(2800)^0 p)/\Gamma_{\text{total}}] / [B(B^+ \rightarrow \bar{\Lambda}_c^- p \pi^+)] = 0.117 \pm 0.023 \pm 0.024$ which we multiply by our best value $B(B^+ \rightarrow \bar{\Lambda}_c^- p \pi^+) = (2.8 \pm 0.8) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041C50
NODE=S041C50

NODE=S041C50;LINKAGE=UB

 $\Gamma(\bar{\Lambda}_c^- p \pi^+ \pi^0)/\Gamma_{\text{total}}$ Γ_{443}/Γ VALUE (units 10^{-3})

CL% DOCUMENT ID TECN COMMENT

1.81±0.29^{+0.52}_{-0.50}1,2 DYTMAN 02 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

<3.12 90 ³FU 97 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ ¹Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.²DYTMAN 02 measurement uses $B(\Lambda_c^- \rightarrow \bar{p} K^+ \pi^-) = 5.0 \pm 1.3\%$. The second error includes the systematic and the uncertainty of the branching ratio.³FU 97 uses PDG 96 values of Λ_c branching ratio.NODE=S041B11
NODE=S041B11

NODE=S041B11;LINKAGE=EP

NODE=S041B11;LINKAGE=FP

NODE=S041B11;LINKAGE=A

 $\Gamma(\bar{\Lambda}_c^- p \pi^+ \pi^+ \pi^-)/\Gamma_{\text{total}}$ Γ_{444}/Γ VALUE (units 10^{-3})

CL% DOCUMENT ID TECN COMMENT

2.25±0.25^{+0.63}_{-0.61}1,2 DYTMAN 02 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

<1.46 90 ³FU 97 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ ¹Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.²DYTMAN 02 measurement uses $B(\Lambda_c^- \rightarrow \bar{p} K^+ \pi^-) = 5.0 \pm 1.3\%$. The second error includes the systematic and the uncertainty of the branching ratio.³FU 97 uses PDG 96 values of Λ_c branching ratio.NODE=S041B12
NODE=S041B12

NODE=S041B12;LINKAGE=EP

NODE=S041B12;LINKAGE=FP

NODE=S041B12;LINKAGE=A

 $\Gamma(\bar{\Lambda}_c^- p \pi^+ \pi^+ \pi^- \pi^0)/\Gamma_{\text{total}}$ Γ_{445}/Γ

VALUE

CL% DOCUMENT ID TECN COMMENT

<1.34 × 10⁻²1 FU 97 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ ¹FU 97 uses PDG 96 values of Λ_c branching ratio.NODE=S041B13
NODE=S041B13

NODE=S041B13;LINKAGE=A

 $\Gamma(\Lambda_c^+ \Lambda_c^- K^+)/\Gamma_{\text{total}}$ Γ_{446}/Γ VALUE (units 10^{-4})

DOCUMENT ID TECN COMMENT

8.7±3.5 OUR AVERAGE

11 ±1 ±6

1,2 AUBERT 08H BABR $e^+ e^- \rightarrow \Upsilon(4S)$

8 ±1 ±4

2,3 GABYSHEV 06 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

¹AUBERT 08H reports $(1.14 \pm 0.15 \pm 0.62) \times 10^{-3}$ from a measurement of $[\Gamma(B^+ \rightarrow \Lambda_c^+ \Lambda_c^- K^+)/\Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow p K^- \pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow p K^- \pi^+) = (5.0 \pm 1.3) \times 10^{-2}$.

²Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

³GABYSHEV 06 reports $(7.9^{+1.0}_{-0.9} \pm 3.6) \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow \Lambda_c^+ \Lambda_c^- K^+)/\Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow p K^- \pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow p K^- \pi^+) = (5.0 \pm 1.3) \times 10^{-2}$.

NODE=S041R02
NODE=S041R02

NODE=S041R02;LINKAGE=AU

NODE=S041R02;LINKAGE=EP

NODE=S041R02;LINKAGE=AG

 $\Gamma(\bar{\Sigma}_c(2455)^0 p)/\Gamma_{\text{total}}$ Γ_{447}/Γ VALUE (units 10^{-5})

CL% DOCUMENT ID TECN COMMENT

3.7±0.8±1.01,2 GABYSHEV 06A BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

<8 90 ^{1,3}DYTMAN 02 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ <9.3 90 ^{1,4}GABYSHEV 02 BELL Repl. by GABYSHEV 06A¹Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

²GABYSHEV 06A reports $(3.7 \pm 0.7 \pm 0.4) \times 10^{-5}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{\Sigma}_c(2455)^0 p)/\Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow p K^- \pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow p K^- \pi^+) = 0.05$, which we rescale to our best value $B(\Lambda_c^+ \rightarrow p K^- \pi^+) = (5.0 \pm 1.3) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

³DYTMAN 02 measurement uses $B(\Lambda_c^- \rightarrow \bar{p} K^+ \pi^-) = 5.0 \pm 1.3\%$. The second error includes the systematic and the uncertainty of the branching ratio.

⁴Uses the value for $\Lambda_c \rightarrow p K^- \pi^+$ branching ratio $(5.0 \pm 1.3)\%$.NODE=S041B88
NODE=S041B88

NODE=S041B88;LINKAGE=EP

NODE=S041B88;LINKAGE=GA

NODE=S041B88;LINKAGE=FP

NODE=S041B88;LINKAGE=GB

$$\Gamma(\bar{\Sigma}_c(2455)^0 p) / \Gamma(\bar{\Lambda}_c^- p \pi^+)$$

 $\Gamma_{447} / \Gamma_{436}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------------|---------------------|-----------|------------------------------------|
| 0.123 ± 0.012 ± 0.008 | ¹ AUBERT | 08BN BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041C17
NODE=S041C17

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041C17;LINKAGE=EP

$$\Gamma(\bar{\Sigma}_c(2455)^0 p \pi^0) / \Gamma_{\text{total}}$$

 Γ_{448} / Γ

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----------------------|---------|------------------------------------|
| 4.4 ± 1.4 ± 1.1 | ^{1,2} DYTMAN | 02 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B79
NODE=S041B79

¹ DYTMAN 02 reports $(4.4 \pm 1.4) \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{\Sigma}_c(2455)^0 p \pi^0) / \Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow p K^- \pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow p K^- \pi^+) = 0.05$, which we rescale to our best value $B(\Lambda_c^+ \rightarrow p K^- \pi^+) = (5.0 \pm 1.3) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041B79;LINKAGE=B9

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B79;LINKAGE=EP

$$\Gamma(\bar{\Sigma}_c(2455)^0 p \pi^- \pi^+) / \Gamma_{\text{total}}$$

 Γ_{449} / Γ

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----------------------|---------|------------------------------------|
| 4.4 ± 1.3 ± 1.1 | ^{1,2} DYTMAN | 02 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B76
NODE=S041B76

¹ DYTMAN 02 reports $(4.4 \pm 1.3) \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{\Sigma}_c(2455)^0 p \pi^- \pi^+) / \Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow p K^- \pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow p K^- \pi^+) = 0.05$, which we rescale to our best value $B(\Lambda_c^+ \rightarrow p K^- \pi^+) = (5.0 \pm 1.3) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=S041B76;LINKAGE=B9

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B76;LINKAGE=EP

$$\Gamma(\bar{\Sigma}_c(2455)^{--} p \pi^+ \pi^+) / \Gamma_{\text{total}}$$

 Γ_{450} / Γ

| VALUE (units 10^{-4}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

3.0 ± 0.8 OUR AVERAGE

$[(2.8 \pm 1.2) \times 10^{-4} \text{ OUR 2012 AVERAGE}]$

| | | | |
|-----------------|-----------------------|----------|------------------------------------|
| 3.0 ± 0.2 ± 0.8 | ^{1,2} LEES | 12Z BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 2.8 ± 0.9 ± 0.9 | ^{1,3} DYTMAN | 02 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B77
NODE=S041B77

NEW

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B77;LINKAGE=EP

² LEES 12Z reports $(2.98 \pm 0.16 \pm 0.15 \pm 0.77) \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{\Sigma}_c(2455)^{--} p \pi^+ \pi^+) / \Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow p K^- \pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow p K^- \pi^+) = (5.0 \pm 1.3) \times 10^{-2}$.

NODE=S041B77;LINKAGE=LE

³ DYTMAN 02 reports $(2.8 \pm 0.9 \pm 0.5 \pm 0.7) \times 10^{-4}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{\Sigma}_c(2455)^{--} p \pi^+ \pi^+) / \Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow p K^- \pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow p K^- \pi^+) = (5.0 \pm 1.3) \times 10^{-2}$.

NODE=S041B77;LINKAGE=B9

$$\Gamma(\bar{\Lambda}_c(2593)^- / \bar{\Lambda}_c(2625)^- p \pi^+) / \Gamma_{\text{total}}$$

 Γ_{451} / Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-----------------------------------|-----|-----------------------|---------|------------------------------------|
| < 1.9 × 10⁻⁴ | 90 | ^{1,2} DYTMAN | 02 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041B78
NODE=S041B78

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B78;LINKAGE=EP

² DYTMAN 02 measurement uses $B(\Lambda_c^- \rightarrow \bar{p} K^+ \pi^-) = 5.0 \pm 1.3\%$. The second error includes the systematic and the uncertainty of the branching ratio.

NODE=S041B78;LINKAGE=FP

$$\Gamma(\Xi_c^0 \Lambda_c^+ \times B(\Xi_c^0 \rightarrow \Xi^+ \pi^-)) / \Gamma_{\text{total}}$$

 Γ_{452} / Γ

| VALUE (units 10^{-5}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

3.0 ± 1.1 OUR AVERAGE

| | | | |
|---|------------------------|----------|------------------------------------|
| 2.5 ± 0.9 ± 0.6 | ^{1,2} AUBERT | 08H BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 5.6 ^{+1.9} _{-1.5} ± 1.9 | ^{2,3} CHISTOV | 06A BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R04
NODE=S041R04

¹ AUBERT 08H reports $(2.51 \pm 0.89 \pm 0.61) \times 10^{-5}$ from a measurement of $[\Gamma(B^+ \rightarrow \Xi_c^0 \Lambda_c^+ \times B(\Xi_c^0 \rightarrow \Xi^+ \pi^-)) / \Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow p K^- \pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow p K^- \pi^+) = (5.0 \pm 1.3) \times 10^{-2}$.

NODE=S041R04;LINKAGE=AU

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R04;LINKAGE=EP

³ CHISTOV 06A reports $(5.6^{+1.9}_{-1.5} \pm 1.9) \times 10^{-5}$ from a measurement of $[\Gamma(B^+ \rightarrow \Xi_c^0 \Lambda_c^+ \times B(\Xi_c^0 \rightarrow \Xi^+ \pi^-)) / \Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow p K^- \pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow p K^- \pi^+) = (5.0 \pm 1.3) \times 10^{-2}$.

NODE=S041R04;LINKAGE=CH

$$\Gamma(\Xi_c^0 \Lambda_c^+ \times B(\Xi_c^0 \rightarrow \Lambda K^+ \pi^-))/\Gamma_{\text{total}} \quad \Gamma_{453}/\Gamma$$

| VALUE (units 10^{-5}) | DOCUMENT ID | TECN | COMMENT |
|---|-------------------------------------|----------|------------------------------------|
| 2.6 ± 1.1 OUR AVERAGE | Error includes scale factor of 1.1. | | |
| $1.7 \pm 0.9 \pm 0.5$ | 1,2 AUBERT | 08H BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $4.0^{+1.1}_{-0.9} \pm 1.3$ | 2,3 CHISTOV | 06A BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041R05
NODE=S041R05

¹ AUBERT 08H reports $(1.70 \pm 0.93 \pm 0.53) \times 10^{-5}$ from a measurement of $[\Gamma(B^+ \rightarrow \Xi_c^0 \Lambda_c^+ \times B(\Xi_c^0 \rightarrow \Lambda K^+ \pi^-))/\Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow p K^- \pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow p K^- \pi^+) = (5.0 \pm 1.3) \times 10^{-2}$.

NODE=S041R05;LINKAGE=AU

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R05;LINKAGE=EP

³ CHISTOV 06A reports $(4.0^{+1.1}_{-0.9} \pm 1.3) \times 10^{-5}$ from a measurement of $[\Gamma(B^+ \rightarrow \Xi_c^0 \Lambda_c^+ \times B(\Xi_c^0 \rightarrow \Lambda K^+ \pi^-))/\Gamma_{\text{total}}] \times [B(\Lambda_c^+ \rightarrow p K^- \pi^+)]$ assuming $B(\Lambda_c^+ \rightarrow p K^- \pi^+) = (5.0 \pm 1.3) \times 10^{-2}$.

NODE=S041R05;LINKAGE=CH

$$\Gamma(\pi^+ \ell^+ \ell^-)/\Gamma_{\text{total}} \quad \Gamma_{454}/\Gamma$$

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|-------------|-----------|------------------------------------|
| $< 4.9 \times 10^{-8}$ | 90 | 1 WEI | 08A BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $< 1.2 \times 10^{-7}$ | 90 | 1 AUBERT | 07AG BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041T20
NODE=S041T20

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T20;LINKAGE=EP

$$\Gamma(\pi^+ e^+ e^-)/\Gamma_{\text{total}} \quad \Gamma_{455}/\Gamma$$

Test for $\Delta B=1$ weak neutral current. Allowed by higher-order electroweak interactions.

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|-------------|-----------|------------------------------------|
| $< 8.0 \times 10^{-8}$ | 90 | 1 WEI | 08A BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $< 1.8 \times 10^{-7}$ | 90 | 1 AUBERT | 07AG BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $< 3.9 \times 10^{-3}$ | 90 | 2 WEIR | 90B MRK2 | $e^+ e^-$ 29 GeV |

NODE=S041R52
NODE=S041R52
NODE=S041R52

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R52;LINKAGE=EP

² WEIR 90B assumes B^+ production cross section from LUND.

NODE=S041R52;LINKAGE=A

$$\Gamma(\pi^+ \mu^+ \mu^-)/\Gamma_{\text{total}} \quad \Gamma_{456}/\Gamma$$

Test for $\Delta B=1$ weak neutral current. Allowed by higher-order electroweak interactions.

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|-------------|-----------|------------------------------------|
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $< 6.9 \times 10^{-8}$ | 90 | 1 WEI | 08A BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $< 2.8 \times 10^{-7}$ | 90 | 1 AUBERT | 07AG BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $< 9.1 \times 10^{-3}$ | 90 | 2 WEIR | 90B MRK2 | $e^+ e^-$ 29 GeV |

NODE=S041R55
NODE=S041R55
NODE=S041R55

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R55;LINKAGE=EP

² WEIR 90B assumes B^+ production cross section from LUND.

NODE=S041R55;LINKAGE=A

$$\Gamma(\pi^+ \mu^+ \mu^-)/\Gamma(K^+ \mu^+ \mu^-) \quad \Gamma_{456}/\Gamma_{460}$$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|-----------|---------------|
| $0.053 \pm 0.014 \pm 0.001$ | AAIJ | 12AY LHCB | pp at 7 TeV |

NODE=S041T91
NODE=S041T91

$$\Gamma(\pi^+ \nu \bar{\nu})/\Gamma_{\text{total}} \quad \Gamma_{457}/\Gamma$$

Test for $\Delta B=1$ weak neutral current. Allowed by higher-order electroweak interactions.

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|-------------|----------|------------------------------------|
| $< 1.0 \times 10^{-4}$ | 90 | 1 AUBERT | 05H BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $< 1.7 \times 10^{-4}$ | 90 | 1 CHEN | 07D BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041S05
NODE=S041S05
NODE=S041S05

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041S05;LINKAGE=EP

$$\Gamma(K^+ \ell^+ \ell^-)/\Gamma_{\text{total}} \quad \Gamma_{458}/\Gamma$$

Test for $\Delta B=1$ weak neutral current. Allowed by higher-order electroweak interactions.

| VALUE (units 10^{-7}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

4.51 ± 0.23 OUR AVERAGE Error includes scale factor of 1.1. $[(5.1 \pm 0.5) \times 10^{-7}]$ OUR 2012 AVERAGE]

NEW

| | | | |
|---|------------|----------|------------------------------------|
| $4.36 \pm 0.15 \pm 0.18$ | 1 AAIJ | 13H LHCB | pp at 7 TeV |
| $4.8 \pm 0.9 \pm 0.2$ | 2 AUBERT | 09T BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $5.3^{+0.6}_{-0.5} \pm 0.3$ | 2 WEI | 09A BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| $3.8^{+0.9}_{-0.8} \pm 0.2$ | 2 AUBERT,B | 06J BABR | Repl. by AUBERT 09T |
| $5.3^{+1.1}_{-1.0} \pm 0.3$ | 2 ISHIKAWA | 03 BELL | Repl. by WEI 09A |

¹ Uses $B(B^+ \rightarrow J/\psi K^+ \rightarrow \mu^+ \mu^- K^+) = (6.01 \pm 0.21) \times 10^{-5}$.

² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

$\Gamma(K^+ e^+ e^-)/\Gamma_{\text{total}}$

Γ_{459}/Γ

Test for $\Delta B=1$ weak neutral current. Allowed by higher-order electroweak interactions.

| VALUE (units 10^{-7}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

5.5 ± 0.7 OUR AVERAGE

| | | | | |
|-----------------------------|--|---------------------|-----|---|
| $5.1^{+1.2}_{-1.1} \pm 0.2$ | | ¹ AUBERT | 09T | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------------|--|---------------------|-----|---|

| | | | | |
|-----------------------------|--|------------------|-----|---|
| $5.7^{+0.9}_{-0.8} \pm 0.3$ | | ¹ WEI | 09A | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------------|--|------------------|-----|---|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-----------------------------|--|-----------------------|-----|--------------------------|
| $4.2^{+1.2}_{-1.1} \pm 0.2$ | | ¹ AUBERT,B | 06J | BABR Repl. by AUBERT 09T |
|-----------------------------|--|-----------------------|-----|--------------------------|

| | | | | |
|------------------------------|--|---------------------|-----|----------------------------|
| $10.5^{+2.5}_{-2.2} \pm 0.7$ | | ¹ AUBERT | 03U | BABR Repl. by AUBERT,B 06J |
|------------------------------|--|---------------------|-----|----------------------------|

| | | | | |
|-----------------------------|--|-----------------------|----|-----------------------|
| $6.3^{+1.9}_{-1.7} \pm 0.3$ | | ² ISHIKAWA | 03 | BELL Repl. by WEI 09A |
|-----------------------------|--|-----------------------|----|-----------------------|

| | | | | |
|------|----|------------------|----|---|
| < 14 | 90 | ¹ ABE | 02 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------|----|------------------|----|---|

| | | | | |
|-----|----|---------------------|-----|---|
| < 9 | 90 | ¹ AUBERT | 02L | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----|----|---------------------|-----|---|

| | | | | |
|------|----|-----------------------|-----|---|
| < 24 | 90 | ³ ANDERSON | 01B | CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------|----|-----------------------|-----|---|

| | | | | |
|-------|----|-----------------------|-----|--|
| < 990 | 90 | ⁴ ALBRECHT | 91E | ARG $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------|----|-----------------------|-----|--|

| | | | | |
|---------|----|-------------------|-----|-----------------------|
| < 68000 | 90 | ⁵ WEIR | 90B | MRK2 $e^+ e^-$ 29 GeV |
|---------|----|-------------------|-----|-----------------------|

| | | | | |
|-------|----|--------------------|-----|---|
| < 600 | 90 | ⁶ AVERY | 89B | CLEO $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------|----|--------------------|-----|---|

| | | | | |
|--------|----|--------------------|----|---|
| < 2500 | 90 | ⁷ AVERY | 87 | CLEO $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------|----|--------------------|----|---|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² Assumes equal production of B^0 and B^+ at $\Upsilon(4S)$. The second error is a total of systematic uncertainties including model dependence.

³ The result is for di-lepton masses above 0.5 GeV.

⁴ ALBRECHT 91E reports $< 9.0 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 45% to $B^0 \bar{B}^0$. We rescale to 50%.

⁵ WEIR 90B assumes B^+ production cross section from LUND.

⁶ AVERY 89B reports $< 5 \times 10^{-5}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \bar{B}^0$. We rescale to 50%.

⁷ AVERY 87 reports $< 2.1 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 40% to $B^0 \bar{B}^0$. We rescale to 50%.

NODE=S041RA1;LINKAGE=AA
NODE=S041RA1;LINKAGE=EP

NODE=S041R11
NODE=S041R11
NODE=S041R11

NODE=S041R11;LINKAGE=EP
NODE=S041R11;LINKAGE=IS

NODE=S041R11;LINKAGE=DL
NODE=S041R11;LINKAGE=B2

NODE=S041R11;LINKAGE=A
NODE=S041R11;LINKAGE=A1

NODE=S041R11;LINKAGE=B1

$\Gamma(K^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$

Γ_{460}/Γ

Test for $\Delta B=1$ weak neutral current. Allowed by higher-order electroweak interactions.

| VALUE (units 10^{-7}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

4.49 ± 0.23 OUR FIT Error includes scale factor of 1.1. $[(4.8 \pm 0.4) \times 10^{-7}$ OUR 2012 FIT]

4.43 ± 0.26 OUR AVERAGE Error includes scale factor of 1.2. $[(5.1^{+0.8}_{-0.7}) \times 10^{-7}$ OUR 2012 AVERAGE]

| | | | | |
|--------------------------|--|-------------------|-----|--------------------------|
| $4.36 \pm 0.15 \pm 0.18$ | | ¹ AAIJ | 13H | LHCB $p\bar{p}$ at 7 TeV |
|--------------------------|--|-------------------|-----|--------------------------|

| | | | | |
|-----------------------------|--|---------------------|-----|---|
| $4.1^{+1.6}_{-1.5} \pm 0.2$ | | ² AUBERT | 09T | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------------|--|---------------------|-----|---|

| | | | | |
|-----------------------------|--|------------------|-----|---|
| $5.3^{+0.8}_{-0.7} \pm 0.3$ | | ² WEI | 09A | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------------|--|------------------|-----|---|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-----------------------------|--|-----------------------|-----|--------------------------|
| $3.1^{+1.5}_{-1.2} \pm 0.3$ | | ² AUBERT,B | 06J | BABR Repl. by AUBERT 09T |
|-----------------------------|--|-----------------------|-----|--------------------------|

| | | | | |
|-----------------------------|--|---------------------|-----|----------------------------|
| $0.7^{+1.9}_{-1.1} \pm 0.2$ | | ² AUBERT | 03U | BABR Repl. by AUBERT,B 06J |
|-----------------------------|--|---------------------|-----|----------------------------|

| | | | | |
|-----------------------------|--|-----------------------|----|-----------------------|
| $4.5^{+1.4}_{-1.2} \pm 0.3$ | | ³ ISHIKAWA | 03 | BELL Repl. by WEI 09A |
|-----------------------------|--|-----------------------|----|-----------------------|

| | | | | |
|-----------------------------|--|------------------|----|---------------------------|
| $9.8^{+4.6}_{-3.6} \pm 1.6$ | | ² ABE | 02 | BELL Repl. by ISHIKAWA 03 |
|-----------------------------|--|------------------|----|---------------------------|

| | | | | |
|------|----|---------------------|-----|---|
| < 12 | 90 | ² AUBERT | 02L | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|------|----|---------------------|-----|---|

| | | | | |
|--------|----|-----------------------|-----|---|
| < 36.8 | 90 | ⁴ ANDERSON | 01B | CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------|----|-----------------------|-----|---|

| | | | | |
|------|----|-----------------------|-----|---------------------------|
| < 52 | 90 | ⁵ AFFOLDER | 99B | CDF $p\bar{p}$ at 1.8 TeV |
|------|----|-----------------------|-----|---------------------------|

| | | | | |
|-------|----|------------------|-----|---------------------------|
| < 100 | 90 | ⁶ ABE | 96L | CDF Repl. by AFFOLDER 99B |
|-------|----|------------------|-----|---------------------------|

| | | | | |
|--------|----|-----------------------|-----|--|
| < 2400 | 90 | ⁷ ALBRECHT | 91E | ARG $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------|----|-----------------------|-----|--|

| | | | | |
|---------|----|-------------------|-----|-----------------------|
| < 64000 | 90 | ⁸ WEIR | 90B | MRK2 $e^+ e^-$ 29 GeV |
|---------|----|-------------------|-----|-----------------------|

| | | | | |
|--------|----|--------------------|-----|---|
| < 1700 | 90 | ⁹ AVERY | 89B | CLEO $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------|----|--------------------|-----|---|

| | | | | |
|--------|----|---------------------|----|---|
| < 3800 | 90 | ¹⁰ AVERY | 87 | CLEO $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------|----|---------------------|----|---|

NODE=S041R10
NODE=S041R10
NODE=S041R10

NEW

NEW

- 1 Uses $B(B^+ \rightarrow J/\psi K^+ \rightarrow \mu^+ \mu^- K^+) = (6.01 \pm 0.21) \times 10^{-5}$.
- 2 Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.
- 3 Assumes equal production of B^0 and B^+ at $\Upsilon(4S)$. The second error is a total of systematic uncertainties including model dependence.
- 4 The result is for di-lepton masses above 0.5 GeV.
- 5 AFFOLDER 99B measured relative to $B^+ \rightarrow J/\psi(1S)K^+$.
- 6 ABE 96L measured relative to $B^+ \rightarrow J/\psi(1S)K^+$ using PDG 94 branching ratios.
- 7 ALBRECHT 91E reports $< 2.2 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 45% to $B^0 \bar{B}^0$. We rescale to 50%.
- 8 WEIR 90B assumes B^+ production cross section from LUND.
- 9 AVERY 89B reports $< 1.5 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 43% to $B^0 \bar{B}^0$. We rescale to 50%.
- 10 AVERY 87 reports $< 3.2 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 40% to $B^0 \bar{B}^0$. We rescale to 50%.

$\Gamma(K^+ \mu^+ \mu^-) / \Gamma(J/\psi(1S)K^+)$

$\Gamma_{460} / \Gamma_{208}$

VALUE (units 10^{-3}) DOCUMENT ID TECN COMMENT

0.437 ± 0.024 OUR FIT Error includes scale factor of 1.1. $[(0.47 \pm 0.04) \times 10^{-3}$ OUR 2012 FIT]

$0.46 \pm 0.04 \pm 0.02$ AALTONEN 11A1 CDF $p\bar{p}$ at 1.96 TeV

• • • We do not use the following data for averages, fits, limits, etc. • • •

$0.38 \pm 0.05 \pm 0.02$ AALTONEN 11L CDF Repl. by AALTONEN 11A1

$0.59 \pm 0.15 \pm 0.03$ AALTONEN 09B CDF Repl. by AALTONEN 11L

$\Gamma(K^+ \bar{\nu}\nu) / \Gamma_{\text{total}}$

Γ_{461} / Γ

Test for $\Delta B=1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE CL% DOCUMENT ID TECN COMMENT

$< 1.3 \times 10^{-5}$ 90 1 DEL-AMO-SA10Q BABR $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

$< 1.4 \times 10^{-5}$ 90 1 CHEN 07D BELL $e^+ e^- \rightarrow \Upsilon(4S)$

$< 5.2 \times 10^{-5}$ 90 1 AUBERT 05H BABR $e^+ e^- \rightarrow \Upsilon(4S)$

$< 2.4 \times 10^{-4}$ 90 1 BROWDER 01 CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$

1 Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

$\Gamma(\rho^+ \nu\bar{\nu}) / \Gamma_{\text{total}}$

Γ_{462} / Γ

Test for $\Delta B=1$ weak neutral current. Allowed by higher-order electroweak interaction.

VALUE CL% DOCUMENT ID TECN COMMENT

$< 1.5 \times 10^{-4}$ 90 1 CHEN 07D BELL $e^+ e^- \rightarrow \Upsilon(4S)$

1 Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

$\Gamma(K^*(892)^+ \ell^+ \ell^-) / \Gamma_{\text{total}}$

Γ_{463} / Γ

Test for $\Delta B=1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE (units 10^{-7}) CL% DOCUMENT ID TECN COMMENT

12.9 ± 2.1 OUR AVERAGE

$14.0^{+4.0}_{-3.7} \pm 0.9$ 1 AUBERT 09T BABR $e^+ e^- \rightarrow \Upsilon(4S)$

$12.4^{+2.3}_{-2.1} \pm 1.3$ 1 WEI 09A BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

$7.3^{+5.0}_{-4.2} \pm 2.1$ 1 AUBERT,B 06J BABR Repl. by AUBERT 09T

< 22 90 1 ISHIKAWA 03 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

1 Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

$\Gamma(K^*(892)^+ \nu\bar{\nu}) / \Gamma_{\text{total}}$

Γ_{466} / Γ

Test for $\Delta B=1$ weak neutral current. Allowed by higher-order electroweak interaction.

VALUE CL% DOCUMENT ID TECN COMMENT

$< 8 \times 10^{-5}$ 90 AUBERT 08BC BABR $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

$< 1.4 \times 10^{-4}$ 90 1 CHEN 07D BELL $e^+ e^- \rightarrow \Upsilon(4S)$

1 Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041R10;LINKAGE=AI
NODE=S041R10;LINKAGE=EP
NODE=S041R10;LINKAGE=IS

NODE=S041R10;LINKAGE=DL
NODE=S041R10;LINKAGE=N1
NODE=S041R10;LINKAGE=PB
NODE=S041R10;LINKAGE=B2

NODE=S041R10;LINKAGE=A
NODE=S041R10;LINKAGE=A1

NODE=S041R10;LINKAGE=B1

NODE=S041T71
NODE=S041T71

NEW

NODE=S041B51
NODE=S041B51
NODE=S041B51

NODE=S041B51;LINKAGE=EP

NODE=S041T28
NODE=S041T28
NODE=S041T28

NODE=S041T28;LINKAGE=EP

NODE=S041RA2
NODE=S041RA2
NODE=S041RA2

NODE=S041RA2;LINKAGE=EP

NODE=S041T29
NODE=S041T29
NODE=S041T29

NODE=S041T29;LINKAGE=EP

$\Gamma(K^*(892)^+ e^+ e^-)/\Gamma_{\text{total}}$ Γ_{464}/Γ Test for $\Delta B=1$ weak neutral current. Allowed by higher-order electroweak interactions.

| VALUE (units 10^{-7}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

15.5^{+4.0}_{-3.1} OUR AVERAGE13.8^{+4.7}_{-4.2} ± 0.8 1 AUBERT 09T BABR $e^+ e^- \rightarrow \Upsilon(4S)$ 17.3^{+5.0}_{-4.2} ± 2.0 1 WEI 09A BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

7.5^{+7.6}_{-6.5} ± 3.8 1 AUBERT,B 06J BABR Repl. by AUBERT 09T2.0^{+13.4}_{-8.7} ± 2.8 1 AUBERT 03U BABR $e^+ e^- \rightarrow \Upsilon(4S)$ < 46 90 2 ISHIKAWA 03 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

< 89 90 1 ABE 02 BELL Repl. by ISHIKAWA 03

< 95 90 1 AUBERT 02L BABR $e^+ e^- \rightarrow \Upsilon(4S)$ < 6900 90 3 ALBRECHT 91E ARG $e^+ e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² Assumes equal production of B^0 and B^+ at $\Upsilon(4S)$. The second error is a total of systematic uncertainties including model dependence.³ ALBRECHT 91E reports $< 6.3 \times 10^{-4}$ assuming the $\Upsilon(4S)$ decays 45% to $B^0 \bar{B}^0$. We rescale to 50%.

NODE=S041R81

NODE=S041R81

NODE=S041R81

NODE=S041R81;LINKAGE=EP

NODE=S041R81;LINKAGE=IS

NODE=S041R81;LINKAGE=B2

 $\Gamma(K^*(892)^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$ Γ_{465}/Γ Test for $\Delta B=1$ weak neutral current. Allowed by higher-order electroweak interactions.

| VALUE (units 10^{-7}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

11.2 ± 1.5 OUR FIT[(10.7 ± 2.2) × 10^{-7} OUR 2012 FIT]**11.6 ± 1.6 OUR AVERAGE**[(11.6^{+3.1}_{-2.7}) × 10^{-7} OUR 2012 AVERAGE]11.6 ± 1.9 AAIJ 12AH LHCB pp at 7 TeV14.6^{+7.9}_{-7.5} ± 1.2 1 AUBERT 09T BABR $e^+ e^- \rightarrow \Upsilon(4S)$ 11.1^{+3.2}_{-2.7} ± 1.0 1 WEI 09A BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

9.7^{+9.4}_{-6.9} ± 1.4 1 AUBERT,B 06J BABR Repl. by AUBERT 09T30.7^{+25.8}_{-17.8} ± 4.2 1 AUBERT 03U BABR $e^+ e^- \rightarrow \Upsilon(4S)$ 6.5^{+6.9+1.5}_{-5.3-1.6} 2 ISHIKAWA 03 BELL Repl. by WEI 09A

< 39 90 1 ABE 02 BELL Repl. by ISHIKAWA 03

< 170 90 1 AUBERT 02L BABR $e^+ e^- \rightarrow \Upsilon(4S)$ < 12000 90 3 ALBRECHT 91E ARG $e^+ e^- \rightarrow \Upsilon(4S)$ ¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² Assumes equal production of B^0 and B^+ at $\Upsilon(4S)$. The second error is a total of systematic uncertainties including model dependence. The 90% C.L. upper limit is 2.2×10^{-6} .³ ALBRECHT 91E reports $< 1.1 \times 10^{-3}$ assuming the $\Upsilon(4S)$ decays 45% to $B^0 \bar{B}^0$. We rescale to 50%.

NODE=S041R82

NODE=S041R82

NODE=S041R82

NEW

NEW

NODE=S041R82;LINKAGE=EP

NODE=S041R82;LINKAGE=IS

NODE=S041R82;LINKAGE=B2

 $\Gamma(K^*(892)^+ \mu^+ \mu^-)/\Gamma(J/\psi(1S)K^*(892)^+)$ $\Gamma_{465}/\Gamma_{211}$

| VALUE (units 10^{-3}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---------|
|--------------------------|-------------|------|---------|

0.78 ± 0.11 OUR FIT[(0.75 ± 0.15) × 10^{-3} OUR 2012 FIT]**0.67 ± 0.22 ± 0.04**AALTONEN 11A1 CDF $p\bar{p}$ at 1.96 TeV

NODE=S041T76

NODE=S041T76

NEW

 $\Gamma(\pi^+ e^+ \mu^-)/\Gamma_{\text{total}}$ Γ_{467}/Γ

Test of lepton family number conservation.

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

< 0.0064 90 1 WEIR 90B MRK2 $e^+ e^-$ 29 GeV¹ WEIR 90B assumes B^+ production cross section from LUND.

NODE=S041R53

NODE=S041R53

NODE=S041R53

NODE=S041R53;LINKAGE=A

 $\Gamma(\pi^+ e^- \mu^+)/\Gamma_{\text{total}}$ Γ_{468}/Γ

Test of lepton family number conservation.

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

< 0.0064 90 1 WEIR 90B MRK2 $e^+ e^-$ 29 GeV¹ WEIR 90B assumes B^+ production cross section from LUND.

NODE=S041R54

NODE=S041R54

NODE=S041R54

NODE=S041R54;LINKAGE=A

$\Gamma(\pi^+ e^\pm \mu^\mp)/\Gamma_{\text{total}}$ Γ_{469}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

| | | | | |
|-----------------------|----|---------------------|-----------|------------------------------------|
| $<1.7 \times 10^{-7}$ | 90 | ¹ AUBERT | 07AG BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------|----|---------------------|-----------|------------------------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T21
NODE=S041T21

NODE=S041T21;LINKAGE=EP

 $\Gamma(\pi^+ e^+ \tau^-)/\Gamma_{\text{total}}$ Γ_{470}/Γ

Test of lepton family number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|-------|----|-------------------|----------|------------------------------------|
| <74 | 90 | ¹ LEES | 12P BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------|----|-------------------|----------|------------------------------------|

¹ Uses a fully reconstructed hadronic B decay as a tag on the recoil side.

NODE=S041T77
NODE=S041T77
NODE=S041T77

NODE=S041T77;LINKAGE=LE

 $\Gamma(\pi^+ e^- \tau^+)/\Gamma_{\text{total}}$ Γ_{471}/Γ

Test of lepton family number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|-------|----|-------------------|----------|------------------------------------|
| <20 | 90 | ¹ LEES | 12P BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------|----|-------------------|----------|------------------------------------|

¹ Uses a fully reconstructed hadronic B decay as a tag on the recoil side.

NODE=S041T78
NODE=S041T78
NODE=S041T78

NODE=S041T78;LINKAGE=LE

 $\Gamma(\pi^+ e^\pm \tau^\mp)/\Gamma_{\text{total}}$ Γ_{472}/Γ

Test of lepton family number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|-------|----|---------------------|----------|------------------------------------|
| <75 | 90 | ^{1,2} LEES | 12P BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------|----|---------------------|----------|------------------------------------|

¹ Assumes $B(B^+ \rightarrow h^+ \ell^+ \tau^-) = B(B^+ \rightarrow h^+ \ell^- \tau^+)$.

² Uses a fully reconstructed hadronic B decay as a tag on the recoil side.

NODE=S041T79
NODE=S041T79
NODE=S041T79

NODE=S041T79;LINKAGE=ES
NODE=S041T79;LINKAGE=LE

 $\Gamma(\pi^+ \mu^+ \tau^-)/\Gamma_{\text{total}}$ Γ_{473}/Γ

Test of lepton family number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|-------|----|-------------------|----------|------------------------------------|
| <62 | 90 | ¹ LEES | 12P BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------|----|-------------------|----------|------------------------------------|

¹ Uses a fully reconstructed hadronic B decay as a tag on the recoil side.

NODE=S041T80
NODE=S041T80
NODE=S041T80

NODE=S041T80;LINKAGE=LE

 $\Gamma(\pi^+ \mu^- \tau^+)/\Gamma_{\text{total}}$ Γ_{474}/Γ

Test of lepton family number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|-------|----|-------------------|----------|------------------------------------|
| <45 | 90 | ¹ LEES | 12P BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------|----|-------------------|----------|------------------------------------|

¹ Uses a fully reconstructed hadronic B decay as a tag on the recoil side.

NODE=S041T81
NODE=S041T81
NODE=S041T81

NODE=S041T81;LINKAGE=LE

 $\Gamma(\pi^+ \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$ Γ_{475}/Γ

Test of lepton family number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|-------|----|---------------------|----------|------------------------------------|
| <72 | 90 | ^{1,2} LEES | 12P BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------|----|---------------------|----------|------------------------------------|

¹ Assumes $B(B^+ \rightarrow h^+ \ell^+ \tau^-) = B(B^+ \rightarrow h^+ \ell^- \tau^+)$.

² Uses a fully reconstructed hadronic B decay as a tag on the recoil side.

NODE=S041T82
NODE=S041T82
NODE=S041T82

NODE=S041T82;LINKAGE=ES
NODE=S041T82;LINKAGE=LE

 $\Gamma(K^+ e^+ \mu^-)/\Gamma_{\text{total}}$ Γ_{476}/Γ

Test of lepton family number conservation.

| VALUE (units 10^{-7}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|---------|----|-----------------------|----------|------------------------------------|
| <0.91 | 90 | ¹ AUBERT,B | 06J BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---------|----|-----------------------|----------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|------|----|---------------------|----------|--------------------------|
| <8 | 90 | ¹ AUBERT | 02L BABR | Repl. by AUBERT,B 06J |
|------|----|---------------------|----------|--------------------------|

| | | | | |
|--------------------|----|-------------------|----------|------------------|
| $<6.4 \times 10^4$ | 90 | ² WEIR | 90B MRK2 | $e^+ e^-$ 29 GeV |
|--------------------|----|-------------------|----------|------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² WEIR 90B assumes B^+ production cross section from LUND.

NODE=S041R56
NODE=S041R56
NODE=S041R56

NODE=S041R56;LINKAGE=EP
NODE=S041R56;LINKAGE=A

 $\Gamma(K^+ e^- \mu^+)/\Gamma_{\text{total}}$ Γ_{477}/Γ

Test of lepton family number conservation.

| VALUE (units 10^{-7}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

| | | | | |
|--------|----|-----------------------|----------|------------------------------------|
| <1.3 | 90 | ¹ AUBERT,B | 06J BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------|----|-----------------------|----------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|--------------------|----|-------------------|----------|------------------|
| $<6.4 \times 10^4$ | 90 | ² WEIR | 90B MRK2 | $e^+ e^-$ 29 GeV |
|--------------------|----|-------------------|----------|------------------|

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

² WEIR 90B assumes B^+ production cross section from LUND.

NODE=S041R57
NODE=S041R57
NODE=S041R57

NODE=S041R57;LINKAGE=EP
NODE=S041R57;LINKAGE=A

$\Gamma(K^+ e^\pm \mu^\mp)/\Gamma_{\text{total}}$ Γ_{478}/Γ

| VALUE (units 10^{-7}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-----------------------|----------|------------------------------------|
| <0.91 | 90 | ¹ AUBERT,B | 06J BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T05
NODE=S041T05

NODE=S041T05;LINKAGE=EP

 $\Gamma(K^+ e^+ \tau^-)/\Gamma_{\text{total}}$ Γ_{479}/Γ

Test of lepton family number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------------|----------|------------------------------------|
| <43 | 90 | ¹ LEES | 12P BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Uses a fully reconstructed hadronic B decay as a tag on the recoil side.

NODE=S041T83
NODE=S041T83
NODE=S041T83

NODE=S041T83;LINKAGE=LE

 $\Gamma(K^+ e^- \tau^+)/\Gamma_{\text{total}}$ Γ_{480}/Γ

Test of lepton family number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------------|----------|------------------------------------|
| <15 | 90 | ¹ LEES | 12P BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Uses a fully reconstructed hadronic B decay as a tag on the recoil side.

NODE=S041T84
NODE=S041T84
NODE=S041T84

NODE=S041T84;LINKAGE=LE

 $\Gamma(K^+ e^\pm \tau^\mp)/\Gamma_{\text{total}}$ Γ_{481}/Γ

Test of lepton family number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---------------------|----------|------------------------------------|
| <30 | 90 | ^{1,2} LEES | 12P BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes $B(B^+ \rightarrow h^+ \ell^+ \tau^-) = B(B^+ \rightarrow h^+ \ell^- \tau^+)$.

² Uses a fully reconstructed hadronic B decay as a tag on the recoil side.

NODE=S041T85
NODE=S041T85
NODE=S041T85

NODE=S041T85;LINKAGE=ES
NODE=S041T85;LINKAGE=LE

 $\Gamma(K^+ \mu^+ \tau^-)/\Gamma_{\text{total}}$ Γ_{482}/Γ

Test of lepton family number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------------|----------|------------------------------------|
| <45 | 90 | ¹ LEES | 12P BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Uses a fully reconstructed hadronic B decay as a tag on the recoil side.

NODE=S041T86
NODE=S041T86
NODE=S041T86

NODE=S041T86;LINKAGE=LE

 $\Gamma(K^+ \mu^- \tau^+)/\Gamma_{\text{total}}$ Γ_{483}/Γ

Test of lepton family number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------------|----------|------------------------------------|
| <28 | 90 | ¹ LEES | 12P BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Uses a fully reconstructed hadronic B decay as a tag on the recoil side.

NODE=S041T87
NODE=S041T87
NODE=S041T87

NODE=S041T87;LINKAGE=LE

 $\Gamma(K^+ \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$ Γ_{484}/Γ

Test of lepton family number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|---|----------|------------------------------------|
| <48 (CL = 90%) | | [<77 $\times 10^{-6}$ (CL = 90%) OUR 2012 BEST LIMIT] | | |
| <48 | 90 | ^{1,2} LEES | 12P BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|-----|----|---------------------|-----------|-------------------|
| <77 | 90 | ¹ AUBERT | 07AZ BABR | Repl. by LEES 12P |
|-----|----|---------------------|-----------|-------------------|

¹ Uses a fully reconstructed hadronic B decay as a tag on the recoil side.

² Assumes $B(B^+ \rightarrow h^+ \ell^+ \tau^-) = B(B^+ \rightarrow h^+ \ell^- \tau^+)$.

NODE=S041T22
NODE=S041T22
NODE=S041T22

NODE=S041T22;LINKAGE=AU
NODE=S041T22;LINKAGE=ES

 $\Gamma(K^*(892)^+ e^+ \mu^-)/\Gamma_{\text{total}}$ Γ_{485}/Γ

| VALUE (units 10^{-7}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-----------------------|----------|------------------------------------|
| <13 | 90 | ¹ AUBERT,B | 06J BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T06
NODE=S041T06

NODE=S041T06;LINKAGE=EP

 $\Gamma(K^*(892)^+ e^- \mu^+)/\Gamma_{\text{total}}$ Γ_{486}/Γ

| VALUE (units 10^{-7}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-----------------------|----------|------------------------------------|
| <9.9 | 90 | ¹ AUBERT,B | 06J BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041T07
NODE=S041T07

NODE=S041T07;LINKAGE=EP

$\Gamma(K^*(892)^+ e^\pm \mu^\mp)/\Gamma_{\text{total}}$ Γ_{487}/Γ

Test of lepton family number conservation.

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|-----------------------|----------|------------------------------------|
| $<1.4 \times 10^{-6}$ | 90 | ¹ AUBERT,B | 06J BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $<7.9 \times 10^{-6}$ | 90 | ¹ AUBERT | 02L BABR | Repl. by AUBERT,B 06J |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B74

NODE=S041B74

NODE=S041B74

NODE=S041B74;LINKAGE=EP

 $\Gamma(\pi^- e^+ e^+)/\Gamma_{\text{total}}$ Γ_{488}/Γ

Test of total lepton number conservation.

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|---|----------|------------------------------------|
| $<2.3 \times 10^{-8}$ (CL = 90%) | | [$<1.6 \times 10^{-6}$ (CL = 90%) OUR 2012 BEST LIMIT] | | |
| $<2.3 \times 10^{-8}$ | 90 | ¹ LEES | 12J BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $<1.6 \times 10^{-6}$ | 90 | ¹ EDWARDS | 02B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| <0.0039 | 90 | ² WEIR | 90B MRK2 | $e^+ e^-$ 29 GeV |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² WEIR 90B assumes B^+ production cross section from LUND.

NODE=S041R58

NODE=S041R58

NODE=S041R58

NODE=S041R58;LINKAGE=EP

NODE=S041R58;LINKAGE=A

 $\Gamma(\pi^- \mu^+ \mu^+)/\Gamma_{\text{total}}$ Γ_{489}/Γ

Test of total lepton number conservation.

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|---|-----------|------------------------------------|
| $<1.3 \times 10^{-8}$ (CL = 95%) | | [$<4.4 \times 10^{-8}$ (CL = 90%) OUR 2012 BEST LIMIT] | | |
| $<1.3 \times 10^{-8}$ | 95 | ¹ AAIJ | 12AD LHCB | pp at 7 TeV |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $<4.4 \times 10^{-8}$ | 90 | AAIJ | 12C LHCB | pp at 7 TeV |
| $<10.7 \times 10^{-8}$ | 90 | ² LEES | 12J BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $<1.4 \times 10^{-6}$ | 90 | ² EDWARDS | 02B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $<9.1 \times 10^{-3}$ | 90 | ³ WEIR | 90B MRK2 | $e^+ e^-$ 29 GeV |

¹ Uses $B^+ \rightarrow J/\psi K^+$, $J/\psi \rightarrow \mu^+ \mu^-$ mode for normalization. Obtains neutrino-mass-dependent upper limits in the range $0.4-1.0 \times 10^{-8}$.² Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.³ WEIR 90B assumes B^+ production cross section from LUND.

NODE=S041R60

NODE=S041R60

NODE=S041R60

NODE=S041R60;LINKAGE=AA

NODE=S041R60;LINKAGE=EP

NODE=S041R60;LINKAGE=A

 $\Gamma(\pi^- e^+ \mu^+)/\Gamma_{\text{total}}$ Γ_{490}/Γ

Test of total lepton number conservation.

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|----------------------|----------|------------------------------------|
| $<1.3 \times 10^{-6}$ | 90 | ¹ EDWARDS | 02B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| <0.0064 | 90 | ² WEIR | 90B MRK2 | $e^+ e^-$ 29 GeV |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² WEIR 90B assumes B^+ production cross section from LUND.

NODE=S041R59

NODE=S041R59

NODE=S041R59

NODE=S041R59;LINKAGE=EP

NODE=S041R59;LINKAGE=A

 $\Gamma(\rho^- e^+ e^+)/\Gamma_{\text{total}}$ Γ_{491}/Γ

Test of total lepton number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|----------------------|----------|------------------------------------|
| <2.6 | 90 | ¹ EDWARDS | 02B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B69

NODE=S041B69

NODE=S041B69

NODE=S041B69;LINKAGE=EP

 $\Gamma(\rho^- \mu^+ \mu^+)/\Gamma_{\text{total}}$ Γ_{492}/Γ

Test of total lepton number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|----------------------|----------|------------------------------------|
| <5.0 | 90 | ¹ EDWARDS | 02B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B73

NODE=S041B73

NODE=S041B73

NODE=S041B73;LINKAGE=EP

 $\Gamma(\rho^- e^+ \mu^+)/\Gamma_{\text{total}}$ Γ_{493}/Γ

Test of total lepton number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|----------------------|----------|------------------------------------|
| <3.3 | 90 | ¹ EDWARDS | 02B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B72

NODE=S041B72

NODE=S041B72

NODE=S041B72;LINKAGE=EP

$\Gamma(K^- e^+ e^+)/\Gamma_{\text{total}}$ Γ_{494}/Γ

Test of total lepton number conservation.

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|--|----------|------------------------------------|
| <3.0 $\times 10^{-8}$ (CL = 90%) | | [<1.0 $\times 10^{-6}$ (CL = 90%) OUR 2012 BEST LIMIT] | | |
| <3.0 $\times 10^{-8}$ | 90 | ¹ LEES | 12J BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| <1.0 $\times 10^{-6}$ | 90 | ¹ EDWARDS | 02B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| <0.0039 | 90 | ² WEIR | 90B MRK2 | $e^+ e^-$ 29 GeV |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² WEIR 90B assumes B^+ production cross section from LUND.

NODE=S041R61

NODE=S041R61

NODE=S041R61

NODE=S041R61;LINKAGE=EP

NODE=S041R61;LINKAGE=A

 $\Gamma(K^- \mu^+ \mu^+)/\Gamma_{\text{total}}$ Γ_{495}/Γ

Test of total lepton number conservation.

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|----------------------|----------|------------------------------------|
| <4.1 $\times 10^{-8}$ | 90 | AAIJ | 12C LHCB | pp at 7 TeV |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| <6.7 $\times 10^{-8}$ | 90 | ¹ LEES | 12J BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| <1.8 $\times 10^{-6}$ | 90 | ¹ EDWARDS | 02B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| <9.1 $\times 10^{-3}$ | 90 | ² WEIR | 90B MRK2 | $e^+ e^-$ 29 GeV |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² WEIR 90B assumes B^+ production cross section from LUND.

NODE=S041R63

NODE=S041R63

NODE=S041R63

NODE=S041R63;LINKAGE=EP

NODE=S041R63;LINKAGE=A

 $\Gamma(K^- e^+ \mu^+)/\Gamma_{\text{total}}$ Γ_{496}/Γ

Test of total lepton number conservation.

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|---|-----|----------------------|----------|------------------------------------|
| <2.0 $\times 10^{-6}$ | 90 | ¹ EDWARDS | 02B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| <0.0064 | 90 | ² WEIR | 90B MRK2 | $e^+ e^-$ 29 GeV |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.² WEIR 90B assumes B^+ production cross section from LUND.

NODE=S041R62

NODE=S041R62

NODE=S041R62

NODE=S041R62;LINKAGE=EP

NODE=S041R62;LINKAGE=A

 $\Gamma(K^*(892)^- e^+ e^+)/\Gamma_{\text{total}}$ Γ_{497}/Γ

Test of total lepton number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|----------------------|----------|------------------------------------|
| <2.8 | 90 | ¹ EDWARDS | 02B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B68

NODE=S041B68

NODE=S041B68

NODE=S041B68;LINKAGE=EP

 $\Gamma(K^*(892)^- \mu^+ \mu^+)/\Gamma_{\text{total}}$ Γ_{498}/Γ

Test of total lepton number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|----------------------|----------|------------------------------------|
| <8.3 | 90 | ¹ EDWARDS | 02B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B70

NODE=S041B70

NODE=S041B70

NODE=S041B70;LINKAGE=EP

 $\Gamma(K^*(892)^- e^+ \mu^+)/\Gamma_{\text{total}}$ Γ_{499}/Γ

Test of total lepton number conservation.

| VALUE (units 10^{-6}) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|----------------------|----------|------------------------------------|
| <4.4 | 90 | ¹ EDWARDS | 02B CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041B71

NODE=S041B71

NODE=S041B71

NODE=S041B71;LINKAGE=EP

 $\Gamma(D^- e^+ e^+)/\Gamma_{\text{total}}$ Γ_{500}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|-------------------|---------|------------------------------------|
| <2.6 $\times 10^{-6}$ | 90 | ¹ SEON | 11 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^0 and B^+ from Upsilon(4S) decays. Uses $D^- \rightarrow K^+ \pi^- \pi^-$ mode and 3-body phase-space hypothesis for the signal decays.

NODE=S041BL1

NODE=S041BL1

NODE=S041BL1;LINKAGE=EP

 $\Gamma(D^- e^+ \mu^+)/\Gamma_{\text{total}}$ Γ_{501}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|--|-----|-------------------|---------|------------------------------------|
| <1.8 $\times 10^{-6}$ | 90 | ¹ SEON | 11 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Assumes equal production of B^0 and B^+ from Upsilon(4S) decays. Uses $D^- \rightarrow K^+ \pi^- \pi^-$ mode and 3-body phase-space hypothesis for the signal decays.

NODE=S041BL2

NODE=S041BL2

NODE=S041BL2;LINKAGE=EP

$\Gamma(D^- \mu^+ \mu^+)/\Gamma_{\text{total}}$ Γ_{502}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

 $<6.9 \times 10^{-7}$ (CL = 95%) [$<1.1 \times 10^{-6}$ (CL = 90%) OUR 2012 BEST LIMIT] $<6.9 \times 10^{-7}$ 95 1 AAIJ 12AD LHCB pp at 7 TeV

••• We do not use the following data for averages, fits, limits, etc. •••

 $<1.1 \times 10^{-6}$ 90 2 SEON 11 BELL $e^+e^- \rightarrow \Upsilon(4S)$ ¹ Uses $B^+ \rightarrow \psi(2S)K^+$, $\psi(2S) \rightarrow J/\psi\pi^+\pi^-$ mode for normalization.² Assumes equal production of B^0 and B^+ from Upsilon(4S) decays. Uses $D^- \rightarrow K^+\pi^-\pi^-$ mode and 3-body phase-space hypothesis for the signal decays.NODE=S041BL3
NODE=S041BL3NODE=S041BL3;LINKAGE=AA
NODE=S041BL3;LINKAGE=EP $\Gamma(D^{*-} \mu^+ \mu^+)/\Gamma_{\text{total}}$ Γ_{503}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

 $<2.4 \times 10^{-6}$ 95 1 AAIJ 12AD LHCB pp at 7 TeV¹ Uses $B^+ \rightarrow \psi(2S)K^+$, $\psi(2S) \rightarrow J/\psi\pi^+\pi^-$ mode for normalization.NODE=S041BL4
NODE=S041BL4

NODE=S041BL4;LINKAGE=AA

 $\Gamma(D_s^- \mu^+ \mu^+)/\Gamma_{\text{total}}$ Γ_{504}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

 $<5.8 \times 10^{-7}$ 95 1 AAIJ 12AD LHCB pp at 7 TeV¹ Uses $B^+ \rightarrow \psi(2S)K^+$, $\psi(2S) \rightarrow J/\psi\pi^+\pi^-$ mode for normalization. Obtains neutrino-mass-dependent upper limits in the range $1.5-8.0 \times 10^{-7}$.NODE=S041BL5
NODE=S041BL5

NODE=S041BL5;LINKAGE=AA

 $\Gamma(\bar{D}^0 \pi^- \mu^+ \mu^+)/\Gamma_{\text{total}}$ Γ_{505}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

 $<1.5 \times 10^{-6}$ 95 1 AAIJ 12AD LHCB pp at 7 TeV¹ Uses $B^+ \rightarrow \psi(2S)K^+$, $\psi(2S) \rightarrow J/\psi\pi^+\pi^-$ mode for normalization. Obtains neutrino-mass-dependent upper limits in the range $0.3-1.5 \times 10^{-6}$.NODE=S041BL6
NODE=S041BL6

NODE=S041BL6;LINKAGE=AA

 $\Gamma(\Lambda^0 \mu^+)/\Gamma_{\text{total}}$ Γ_{506}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

 $<6 \times 10^{-8}$ 90 1,2 DEL-AMO-SA..11K BABR $e^+e^- \rightarrow \Upsilon(4S)$ ¹ DEL-AMO-SANCHEZ 11K reports $< 6.1 \times 10^{-8}$ from a measurement of $[\Gamma(B^+ \rightarrow \Lambda^0 \mu^+)/\Gamma_{\text{total}}] \times [B(\Lambda \rightarrow p\pi^-)]$ assuming $B(\Lambda \rightarrow p\pi^-) = (63.9 \pm 0.5) \times 10^{-2}$.² Uses $B(\Upsilon(4S) \rightarrow B^0 \bar{B}^0) = (51.6 \pm 0.6)\%$ and $B(\Upsilon(4S) \rightarrow B^+ B^-) = (48.4 \pm 0.6)\%$.NODE=S041T66
NODE=S041T66

NODE=S041T66;LINKAGE=DE

NODE=S041T66;LINKAGE=NP

 $\Gamma(\Lambda^0 e^+)/\Gamma_{\text{total}}$ Γ_{507}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

 $<3.2 \times 10^{-8}$ 90 1,2 DEL-AMO-SA..11K BABR $e^+e^- \rightarrow \Upsilon(4S)$ ¹ DEL-AMO-SANCHEZ 11K reports $< 3.2 \times 10^{-8}$ from a measurement of $[\Gamma(B^+ \rightarrow \Lambda^0 e^+)/\Gamma_{\text{total}}] \times [B(\Lambda \rightarrow p\pi^-)]$ assuming $B(\Lambda \rightarrow p\pi^-) = (63.9 \pm 0.5) \times 10^{-2}$.² Uses $B(\Upsilon(4S) \rightarrow B^0 \bar{B}^0) = (51.6 \pm 0.6)\%$ and $B(\Upsilon(4S) \rightarrow B^+ B^-) = (48.4 \pm 0.6)\%$.NODE=S041T67
NODE=S041T67

NODE=S041T67;LINKAGE=DE

NODE=S041T67;LINKAGE=NP

 $\Gamma(\bar{\Lambda}^0 \mu^+)/\Gamma_{\text{total}}$ Γ_{508}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

 $<6 \times 10^{-8}$ 90 1,2 DEL-AMO-SA..11K BABR $e^+e^- \rightarrow \Upsilon(4S)$ ¹ DEL-AMO-SANCHEZ 11K reports $< 6.2 \times 10^{-8}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{\Lambda}^0 \mu^+)/\Gamma_{\text{total}}] \times [B(\Lambda \rightarrow p\pi^-)]$ assuming $B(\Lambda \rightarrow p\pi^-) = (63.9 \pm 0.5) \times 10^{-2}$.² Uses $B(\Upsilon(4S) \rightarrow B^0 \bar{B}^0) = (51.6 \pm 0.6)\%$ and $B(\Upsilon(4S) \rightarrow B^+ B^-) = (48.4 \pm 0.6)\%$.NODE=S041T68
NODE=S041T68

NODE=S041T68;LINKAGE=DE

NODE=S041T68;LINKAGE=NP

 $\Gamma(\bar{\Lambda}^0 e^+)/\Gamma_{\text{total}}$ Γ_{509}/Γ

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|-------|-----|-------------|------|---------|
|-------|-----|-------------|------|---------|

 $<8 \times 10^{-8}$ 90 1,2 DEL-AMO-SA..11K BABR $e^+e^- \rightarrow \Upsilon(4S)$ ¹ DEL-AMO-SANCHEZ 11K reports $< 8.1 \times 10^{-8}$ from a measurement of $[\Gamma(B^+ \rightarrow \bar{\Lambda}^0 e^+)/\Gamma_{\text{total}}] \times [B(\Lambda \rightarrow p\pi^-)]$ assuming $B(\Lambda \rightarrow p\pi^-) = (63.9 \pm 0.5) \times 10^{-2}$.² Uses $B(\Upsilon(4S) \rightarrow B^0 \bar{B}^0) = (51.6 \pm 0.6)\%$ and $B(\Upsilon(4S) \rightarrow B^+ B^-) = (48.4 \pm 0.6)\%$.NODE=S041T69
NODE=S041T69

NODE=S041T69;LINKAGE=DE

NODE=S041T69;LINKAGE=NP

POLARIZATION IN B^+ DECAY

In decays involving two vector mesons, one can distinguish among the states in which meson polarizations are both longitudinal (L) or both are transverse and parallel (\parallel) or perpendicular (\perp) to each other with the parameters Γ_L/Γ , Γ_\perp/Γ , and the relative phases ϕ_\parallel and ϕ_\perp . See the definitions in the note on "Polarization in B Decays" review in the B^0 Particle Listings.

NODE=S041230

NODE=S041230

Γ_L/Γ in $B^+ \rightarrow \bar{D}^{*0} \rho^+$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---|
| 0.892±0.018±0.016 | CSORNA | 03 | CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041P1
NODE=S041P1

Γ_L/Γ in $B^+ \rightarrow \bar{D}^{*0} K^{*+}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-----------------------|-------------|------|---|
| 0.86±0.06±0.03 | AUBERT | 04K | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041GL1
NODE=S041GL1

Γ_L/Γ in $B^+ \rightarrow J/\psi K^{*+}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---|
| 0.604±0.015±0.018 | ITOH | 05 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041GL2
NODE=S041GL2

Γ_\perp/Γ in $B^+ \rightarrow J/\psi K^{*+}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|---|
| 0.180±0.014±0.010 | ITOH | 05 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041GP2
NODE=S041GP2

Γ_L/Γ in $B^+ \rightarrow \omega K^{*+}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-----------------------|-------------|------|---|
| 0.41±0.18±0.05 | AUBERT | 09H | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041P11
NODE=S041P11

Γ_L/Γ in $B^+ \rightarrow \omega K_2^*(1430)^+$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-----------------------|-------------|------|---|
| 0.56±0.10±0.04 | AUBERT | 09H | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041P12
NODE=S041P12

Γ_L/Γ in $B^+ \rightarrow K^{*+} \bar{K}^{*0}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|---------------------|------|---|
| 0.75^{+0.16}_{-0.26}±0.03 | ¹ AUBERT | 09F | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041P05
NODE=S041P05

¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.

NODE=S041P05;LINKAGE=EP

Γ_L/Γ in $B^+ \rightarrow \phi K^*(892)^+$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---|
| 0.50±0.05 OUR AVERAGE | | | |
| 0.49±0.05±0.03 | AUBERT | 07BA | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.52±0.08±0.03 | CHEN | 05A | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| 0.46±0.12±0.03 | AUBERT | 03V | BABR Repl. by AUBERT 07BA |

NODE=S041P3
NODE=S041P3

Γ_\perp/Γ in $B^+ \rightarrow \phi K^{*+}$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-------------|------|---|
| 0.20±0.05 OUR AVERAGE | | | |
| 0.21±0.05±0.02 | AUBERT | 07BA | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.19±0.08±0.02 | CHEN | 05A | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q58
NODE=S041Q58

ϕ_\parallel in $B^+ \rightarrow \phi K^{*+}$

| VALUE (°) | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-------------|------|---|
| 2.34±0.18 OUR AVERAGE | | | |
| 2.47±0.20±0.07 | AUBERT | 07BA | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 2.10±0.28±0.04 | CHEN | 05A | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q59
NODE=S041Q59

ϕ_\perp in $B^+ \rightarrow \phi K^{*+}$

| VALUE (°) | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-------------|------|---|
| 2.58±0.17 OUR AVERAGE | | | |
| 2.69±0.20±0.03 | AUBERT | 07BA | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 2.31±0.30±0.07 | CHEN | 05A | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q60
NODE=S041Q60

$\delta_0(B^+ \rightarrow \phi K^{*+})$

| VALUE (rad) | DOCUMENT ID | TECN | COMMENT |
|-----------------------|-------------|------|---|
| 3.07±0.18±0.06 | AUBERT | 07BA | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q90
NODE=S041Q90

$A_{CP}^0(B^+ \rightarrow \phi K^{*+})$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|-----------|------------------------------------|
| $0.17 \pm 0.11 \pm 0.02$ | AUBERT | 07BA BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q91
NODE=S041Q91

 $A_{CP}^\perp(B^+ \rightarrow \phi K^{*+})$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|-----------|------------------------------------|
| $0.22 \pm 0.24 \pm 0.08$ | AUBERT | 07BA BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q92
NODE=S041Q92

 $\Delta\phi_{\parallel}(B^+ \rightarrow \phi K^{*+})$

| VALUE (rad) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|-----------|------------------------------------|
| $0.07 \pm 0.20 \pm 0.05$ | AUBERT | 07BA BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q93
NODE=S041Q93

 $\Delta\phi_\perp(B^+ \rightarrow \phi K^{*+})$

| VALUE (rad) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|-----------|------------------------------------|
| $0.19 \pm 0.20 \pm 0.07$ | AUBERT | 07BA BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q94
NODE=S041Q94

 $\Delta\delta_0(B^+ \rightarrow \phi K^{*+})$

| VALUE (rad) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|-----------|------------------------------------|
| $0.20 \pm 0.18 \pm 0.03$ | AUBERT | 07BA BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q95
NODE=S041Q95

 Γ_L/Γ in $B^+ \rightarrow \phi K_1(1270)^+$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|----------------------------------|-------------|-----------|------------------------------------|
| $0.46^{+0.12+0.06}_{-0.13-0.07}$ | AUBERT | 08BI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q98
NODE=S041Q98

 Γ_L/Γ in $B^+ \rightarrow \phi K_2^*(1430)^+$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|-------------|-----------|------------------------------------|
| $0.80^{+0.09}_{-0.10} \pm 0.03$ | AUBERT | 08BI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041Q99
NODE=S041Q99

 $\delta_0(B^+ \rightarrow \phi K_2^*(1430)^+)$

| VALUE (rad) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|-----------|------------------------------------|
| $3.59 \pm 0.19 \pm 0.12$ | AUBERT | 08BI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041P08
NODE=S041P08

 $\Delta\delta_0(B^+ \rightarrow \phi K_2^*(1430)^+)$

| VALUE (rad) | DOCUMENT ID | TECN | COMMENT |
|---------------------------|-------------|-----------|------------------------------------|
| $-0.05 \pm 0.19 \pm 0.06$ | AUBERT | 08BI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041P09
NODE=S041P09

 Γ_L/Γ in $B^+ \rightarrow \rho^0 K^*(892)^+$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----------------|------|------------------------------------|
| $0.78 \pm 0.12 \pm 0.03$ | DEL-AMO-SA..11D | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041P4
NODE=S041P4

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|---------------------------------|--------|----------|------------------------------|
| $0.96^{+0.04}_{-0.15} \pm 0.04$ | AUBERT | 03V BABR | Repl. by DEL-AMO-SANCHEZ 11D |
|---------------------------------|--------|----------|------------------------------|

 $\Gamma_L/\Gamma(B^+ \rightarrow K^*(892)^0 \rho^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---------|
| 0.48 ± 0.08 OUR AVERAGE | | | |

NODE=S041P06
NODE=S041P06

| | | | |
|--------------------------|----------|----------|------------------------------------|
| $0.52 \pm 0.10 \pm 0.04$ | AUBERT,B | 06G BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------------|----------|----------|------------------------------------|

| | | | |
|---------------------------------|-------|----------|------------------------------------|
| $0.43 \pm 0.11^{+0.05}_{-0.02}$ | ZHANG | 05D BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---------------------------------|-------|----------|------------------------------------|

 Γ_L/Γ in $B^+ \rightarrow \rho^+ \rho^0$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---------|
| 0.950 ± 0.016 OUR AVERAGE | | | |

NODE=S041P2
NODE=S041P2

| | | | |
|-----------------------------|--------|----------|------------------------------------|
| $0.950 \pm 0.015 \pm 0.006$ | AUBERT | 09G BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------------|--------|----------|------------------------------------|

| | | | |
|-----------------------------|-------|----------|------------------------------------|
| $0.948 \pm 0.106 \pm 0.021$ | ZHANG | 03B BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------------|-------|----------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|-------------------------------------|-----------|----------|---------------------|
| $0.905 \pm 0.042^{+0.023}_{-0.027}$ | AUBERT,BE | 06G BABR | Repl. by AUBERT 09G |
|-------------------------------------|-----------|----------|---------------------|

| | | | |
|---------------------------------|--------|----------|------------------------|
| $0.97^{+0.03}_{-0.07} \pm 0.04$ | AUBERT | 03V BABR | Repl. by AUBERT,BE 06G |
|---------------------------------|--------|----------|------------------------|

 Γ_L/Γ in $B^+ \rightarrow \omega \rho^+$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------|----------|------------------------------------|
| $0.90 \pm 0.05 \pm 0.03$ | AUBERT | 09H BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041P5
NODE=S041P5

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|--------------------------|----------|----------|---------------------|
| $0.82 \pm 0.11 \pm 0.02$ | AUBERT,B | 06T BABR | Repl. by AUBERT 09H |
|--------------------------|----------|----------|---------------------|

| | | | |
|---------------------------------|--------|----------|-----------------------|
| $0.88^{+0.12}_{-0.15} \pm 0.03$ | AUBERT | 05O BABR | Repl. by AUBERT,B 06T |
|---------------------------------|--------|----------|-----------------------|

Γ_L/Γ in $B^+ \rightarrow p\bar{p}K^*(892)^+$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-----------------------|-------------|------|--|
| 0.32±0.17±0.09 | CHEN | 08C | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041P07
NODE=S041P07

CP VIOLATION

NODE=S041220

A_{CP} is defined as

NODE=S041220

$$\frac{B(B^- \rightarrow \bar{f}) - B(B^+ \rightarrow f)}{B(B^- \rightarrow \bar{f}) + B(B^+ \rightarrow f)}$$

the CP-violation charge asymmetry of exclusive B^- and B^+ decay.

$A_{CP}(B^+ \rightarrow J/\psi(1S)K^+)$

NODE=S041AX1
NODE=S041AX1

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|-------------------------------------|
| (1 ±7) × 10⁻³ OUR AVERAGE | | | Error includes scale factor of 1.8. |

See the ideogram below.

| | | | | |
|---|------------------------|-----|------|-----------------------------------|
| - 0.0076±0.0050±0.0022 | SAKAI | 10 | BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 0.0075±0.0061±0.0030 | ¹ ABAZOV | 08O | D0 | $p\bar{p}$ at 1.96 TeV |
| 0.09 ±0.07 ±0.02 | ² WEI | 08 | BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 0.030 ±0.014 ±0.010 | ³ AUBERT | 05J | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| 0.018 ±0.043 ±0.004 | ⁴ BONVICINI | 00 | CLE2 | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| 0.03 ±0.015 ±0.006 | AUBERT | 04P | BABR | Repl. by AUBERT 05J |
| - 0.026 ±0.022 ±0.017 | ABE | 03B | BELL | Repl. by SAKAI 10 |
| 0.003 ±0.030 ±0.004 | AUBERT | 02F | BABR | Repl. by AUBERT 04P |

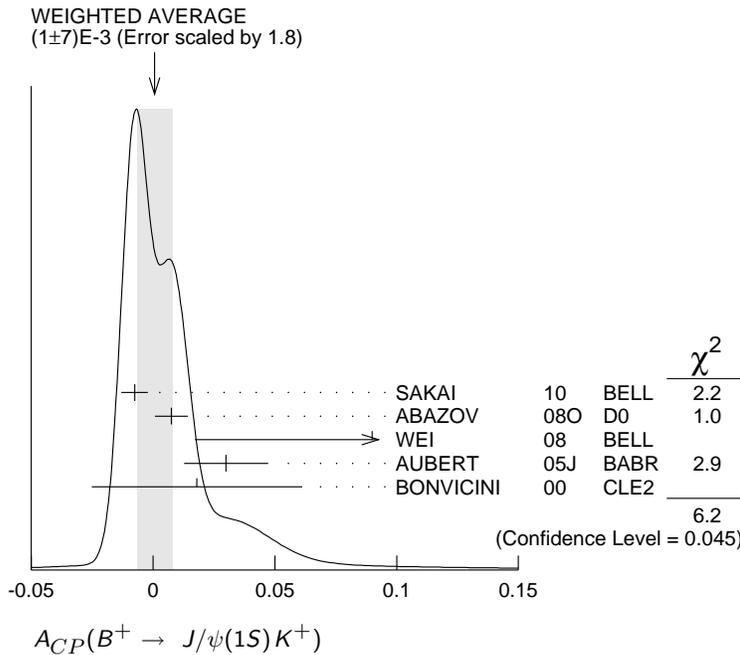
¹ Uses $J/\psi \rightarrow \mu^+\mu^-$ decay.

² Uses $B^+ \rightarrow J/\psi K^+$, where $J/\psi \rightarrow p\bar{p}$.

³ The result reported corresponds to $-A_{CP}$.

⁴ A +0.3% correction is applied due to a slightly higher reconstruction efficiency for the positive kaons.

NODE=S041AX1;LINKAGE=AZ
NODE=S041AX1;LINKAGE=WE
NODE=S041AX1;LINKAGE=AB
NODE=S041AX1;LINKAGE=A



$A_{CP}(B^+ \rightarrow J/\psi(1S)\pi^+)$

NODE=S041AX9
NODE=S041AX9
NEW

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------------------|-------------|------|---|
| 0.007±0.033 OUR AVERAGE | | | Error includes scale factor of 1.3. See the ideogram below. [0.01 ± 0.07 OUR 2012 AVERAGE Scale factor = 1.3] |

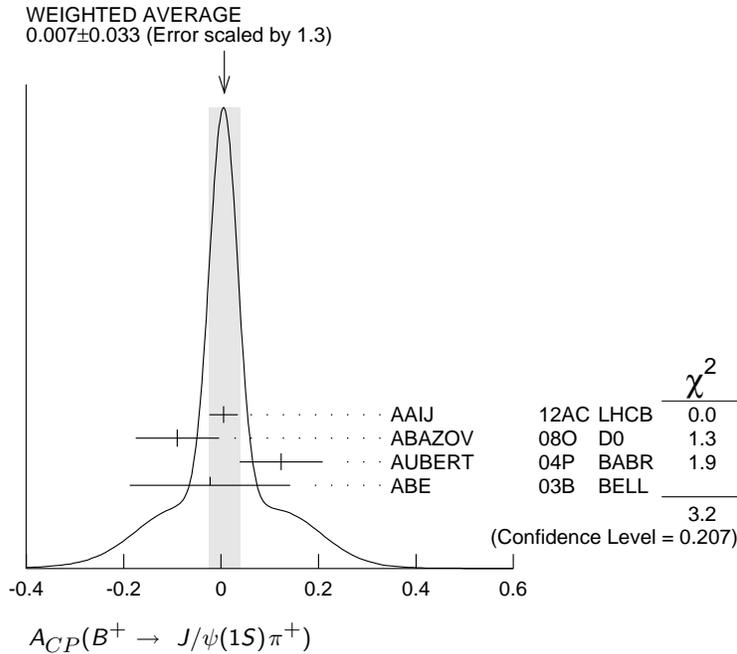
| | | | | |
|---|---------------------|------|------|-----------------------------------|
| 0.005±0.027±0.011 | ¹ AAIJ | 12AC | LHCB | $p\bar{p}$ at 7 TeV |
| -0.09 ±0.08 ±0.03 | ² ABAZOV | 08O | D0 | $p\bar{p}$ at 1.96 TeV |
| 0.123±0.085±0.004 | AUBERT | 04P | BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| -0.023±0.164±0.015 | ABE | 03B | BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| 0.01 ±0.22 ±0.01 | AUBERT | 02F | BABR | Repl. by AUBERT 04P |

¹ Uses $A_{CP}(B^+ \rightarrow J/\psi K^+) = 0.001 \pm 0.007$ to extract production asymmetry.

² Uses $J/\psi \rightarrow \mu^+ \mu^-$ decay.

NODE=S041AX9;LINKAGE=AA

NODE=S041AX9;LINKAGE=AZ



$A_{CP}(B^+ \rightarrow J/\psi \rho^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------|-------------|------|---|
| -0.11±0.12±0.08 | AUBERT | 07AC | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AC5

NODE=S041AC5

$A_{CP}(B^+ \rightarrow J/\psi K^*(892)^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------|---------------------|------|---|
| =0.048±0.029±0.016 | ¹ AUBERT | 05J | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AW1

NODE=S041AW1

¹ The result reported corresponds to $-A_{CP}$.

NODE=S041AW1;LINKAGE=AB

$A_{CP}(B^+ \rightarrow \eta_c K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------|------------------|------|---|
| -0.16±0.08±0.02 | ¹ WEI | 08 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041ABE

NODE=S041ABE

¹ Uses $B^+ \rightarrow \eta_c K^+$, where $\eta_c \rightarrow \rho \bar{p}$.

NODE=S041ABE;LINKAGE=WE

$A_{CP}(B^+ \rightarrow \psi(2S)\pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------------|------|---|
| 0.03 ± 0.06 OUR AVERAGE [0.02 ± 0.09 OUR 2012 AVERAGE] | | | |
| 0.048±0.090±0.011 | ¹ AAIJ | 12AC | LHCB pp at 7 TeV |
| 0.022±0.085±0.016 | BHARDWAJ | 08 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AZ2

NODE=S041AZ2

NEW

¹ Uses $A_{CP}(B^+ \rightarrow J/\psi K^+) = 0.001 \pm 0.007$ to extract production asymmetry.

NODE=S041AZ2;LINKAGE=AA

$A_{CP}(B^+ \rightarrow \psi(2S)K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|------------------------|------|---|
| 0.008±0.021 OUR AVERAGE | | | |
| Error includes scale factor of 1.6. See the ideogram below. [-0.025 ± 0.024 OUR 2012 AVERAGE] | | | |
| 0.024±0.014±0.008 | ¹ AAIJ | 12AC | LHCB pp at 7 TeV |
| 0.052±0.059±0.020 | AUBERT | 05J | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| -0.042±0.020±0.017 | ABE | 03B | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.02 ± 0.091±0.01 | ² BONVICINI | 00 | CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AX2

NODE=S041AX2

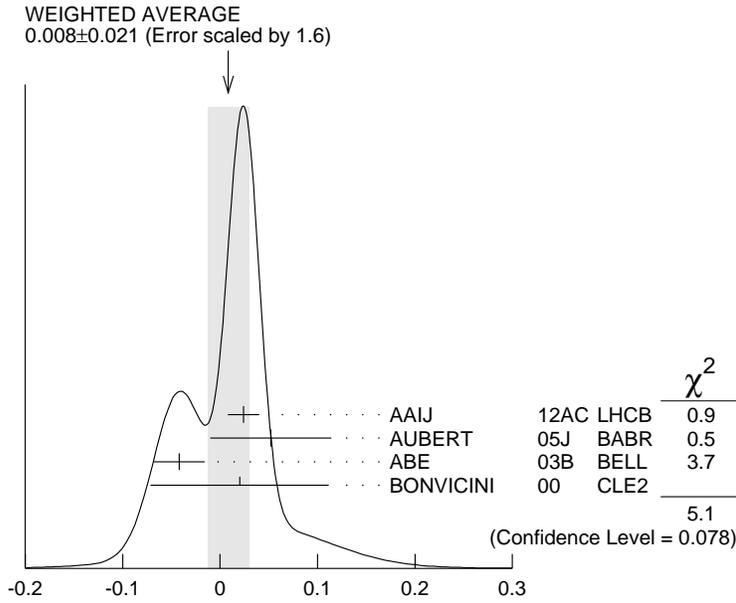
NEW

¹ Uses $A_{CP}(B^+ \rightarrow J/\psi K^+) = 0.001 \pm 0.007$ to extract production asymmetry.

NODE=S041AX2;LINKAGE=AA

² A +0.3% correction is applied due to a slightly higher reconstruction efficiency for the positive kaons.

NODE=S041AX2;LINKAGE=A



$ACP(B^+ \rightarrow \psi(2S)K^+)$

$ACP(B^+ \rightarrow \psi(2S)K^*(892)^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------------|---------------------|------|---|
| 0.077±0.207±0.051 | ¹ AUBERT | 05J | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AW2
NODE=S041AW2

¹The result reported corresponds to $-ACP$.

NODE=S041AW2;LINKAGE=AB

$ACP(B^+ \rightarrow \chi_{c1}(1P)\pi^+)$

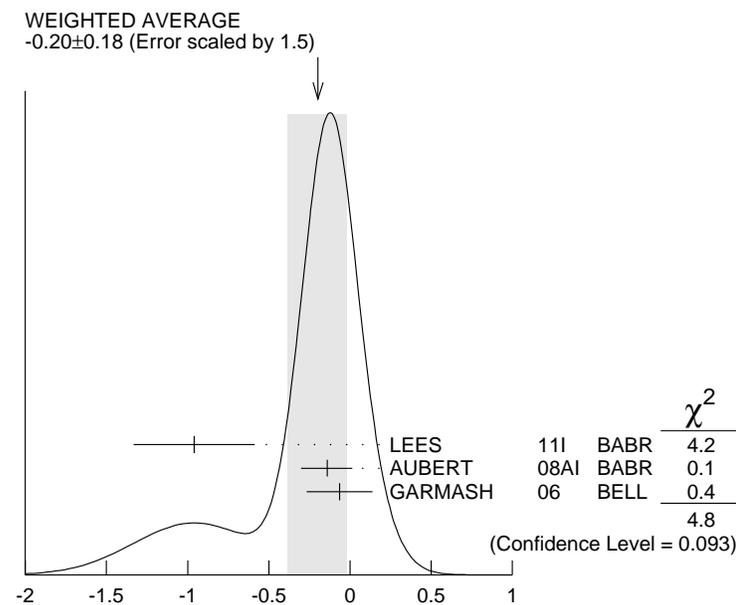
| VALUE | DOCUMENT ID | TECN | COMMENT |
|-----------------------|-------------|------|---|
| 0.07±0.18±0.02 | KUMAR | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AW5
NODE=S041AW5

$ACP(B^+ \rightarrow \chi_{c0}K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|---|------|---|
| -0.20 ±0.18 OUR AVERAGE | Error includes scale factor of 1.5. See the ideogram below. | | |
| -0.96 ±0.37±0.04 | LEES | 11I | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| -0.14 ±0.15 ^{+0.03} _{-0.06} | AUBERT | 08AI | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| -0.065±0.20 ^{+0.035} _{-0.024} | GARMASH | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CQ9
NODE=S041CQ9



$ACP(B^+ \rightarrow \chi_{c0}K^+)$

$A_{CP}(B^+ \rightarrow \chi_{c1} K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|---------------------|------|---|
| -0.009±0.033 OUR AVERAGE | | | |
| -0.01 ±0.03 ±0.02 | KUMAR | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
| -0.003±0.076±0.017 | ¹ AUBERT | 05J | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ The result reported corresponds to $-A_{CP}$.

NODE=S041AW3
NODE=S041AW3

NODE=S041AW3;LINKAGE=AB

 $A_{CP}(B^+ \rightarrow \chi_{c1} K^*(892)^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------------|---------------------|------|---|
| 0.471±0.378±0.268 | ¹ AUBERT | 05J | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ The result reported corresponds to $-A_{CP}$.

NODE=S041AW4
NODE=S041AW4

NODE=S041AW4;LINKAGE=AB

 $A_{CP}(B^+ \rightarrow \bar{D}^0 \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------|-------------|------|---|
| -0.008±0.008 | ABE | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AD2
NODE=S041AD2

 $A_{CP}(B^+ \rightarrow D_{CP(+1)} \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------|-------------|------|---|
| 0.035±0.024 | ABE | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AD3
NODE=S041AD3

 $A_{CP}(B^+ \rightarrow D_{CP(-1)} \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------|-------------|------|---|
| 0.017±0.026 | ABE | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AD4
NODE=S041AD4

 $A_{CP}(B^+ \rightarrow \bar{D}^0 K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------|-------------|------|---|
| 0.066±0.036 | ABE | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AY2
NODE=S041AY2

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|-------------------|--------------------|-----|------------------------|
| 0.003±0.080±0.037 | ¹ ABE | 03D | BELL Repl. by SWAIN 03 |
| 0.04 ±0.06 ±0.03 | ² SWAIN | 03 | BELL Repl. by ABE 06 |

¹ Corresponds to 90% confidence range $-0.15 < A_{CP} < 0.16$.

² Corresponds to 90% confidence range $-0.07 < A_{CP} < 0.15$.

NODE=S041AY2;LINKAGE=A
NODE=S041AY2;LINKAGE=SW

 $r_B(B^+ \rightarrow D^0 K^+)$

r_B and δ_B are the amplitude ratio and relative strong phase between the amplitudes of $A(B^+ \rightarrow D^0 K^+)$ and $A(B^+ \rightarrow \bar{D}^0 K^+)$,

NODE=S041ARX
NODE=S041ARX

| VALUE | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------------|-----|-------------|------|---|
| 0.096±0.014 OUR AVERAGE | | | | Error includes scale factor of 1.2. $[0.113^{+0.024}_{-0.021}]$ OUR 2012 AVERAGE] |

NODE=S041ARX
NEW

| | | | |
|---------------------------------------|------------------------|------|---|
| $0.092^{+0.013}_{-0.012}$ | ¹ LEES | 13B | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.07 ± 0.04 | ^{2,3} AAIJ | 12AQ | LHCB pp at 7 TeV |
| $0.160^{+0.040+0.051}_{-0.038-0.015}$ | ⁴ POLUEKTOV | 10 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|-------------------------------------|------------------------------|------|---|
| $0.145 \pm 0.030 \pm 0.015$ | ^{3,5} AIHARA | 12 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
| < 0.13 | ⁶ LEES | 11D | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $0.096 \pm 0.029 \pm 0.006$ | ⁷ DEL-AMO-SA..10F | BABR | Repl. by LEES 13B |
| $0.095^{+0.051}_{-0.041}$ | ⁸ DEL-AMO-SA..10H | BABR | Repl. by LEES 13B |
| $0.086 \pm 0.032 \pm 0.015$ | ⁹ AUBERT | 08AL | BABR Repl. by DEL-AMO-SANCHEZ 10F |
| < 0.19 | ⁹⁰ HORII | 08 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $0.159^{+0.054}_{-0.050} \pm 0.050$ | ¹⁰ POLUEKTOV | 06 | BELL Repl. by POLUEKTOV 10 |
| $0.12 \pm 0.08 \pm 0.05$ | ¹¹ AUBERT,B | 05Y | BABR Repl. by AUBERT 08AL |

¹ Reports combination of published measurements using GGSZ, GLW, and ADS methods.

² Reports combined statistical and systematic uncertainties.

³ Uses binned Dalitz plot of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ decays from $B^+ \rightarrow \bar{D}^0 K^+$. Measurement of strong phases in $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ Dalitz plot from LIBBY 10 is used as input.

⁴ Uses Dalitz plot analysis of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ decays from $B^+ \rightarrow D^0 K^+$ modes. The corresponding two standard deviation interval is $0.084 < r_B < 0.239$.

⁵ We combined the systematics in quadrature. The authors report separately the contribution to the systematic uncertainty due to the uncertainty on the bin-averaged strong phase difference between D^0 and \bar{D}^0 amplitudes.

⁶ Uses decays of neutral D to $K^- \pi^+ \pi^0$.

NODE=S041ARX;LINKAGE=LS
NODE=S041ARX;LINKAGE=AA
NODE=S041ARX;LINKAGE=AH

NODE=S041ARX;LINKAGE=PU

NODE=S041ARX;LINKAGE=AI

NODE=S041ARX;LINKAGE=LE

- ⁷ Uses Dalitz plot analysis of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$, $K_S^0 K^+ K^-$ decays from $B^+ \rightarrow D^{(*)} K^{(*)+}$ modes. The corresponding two standard deviation interval is $0.037 < r_B < 0.155$.
- ⁸ Uses the Cabibbo suppressed decay of $B^+ \rightarrow \bar{D} K^+$ followed by $\bar{D} \rightarrow K^- \pi^+$.
- ⁹ Uses Dalitz plot analysis of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ and $\bar{D}^0 \rightarrow K_S^0 K^+ K^-$ decays coming from $B^\pm \rightarrow D^{(*)} K^{(*)\pm}$ modes.
- ¹⁰ Uses a Dalitz plot analysis of the $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ decays; Combines the DK^+ , $D^* K^+$ and DK^{*+} modes.
- ¹¹ Uses a Dalitz analysis of neutral D decays to $K_S^0 \pi^+ \pi^-$ in the processes $B^\pm \rightarrow D^{(*)} K^\pm$, $D^* \rightarrow D\pi^0$, $D\gamma$.

NODE=S041ARX;LINKAGE=DE

NODE=S041ARX;LINKAGE=DL

NODE=S041ARX;LINKAGE=AB

NODE=S041ARX;LINKAGE=PO

NODE=S041ARX;LINKAGE=AU

 $\delta_B(B^+ \rightarrow D^0 K^+)$

| VALUE (°) | DOCUMENT ID | TECN | COMMENT |
|-----------|-------------|------|---------|
|-----------|-------------|------|---------|

115 ± 13 OUR AVERAGE

[(125 ± 16)° OUR 2012 AVERAGE]

| | | | |
|--------------------|-------------------|-----|---|
| 105 $^{+16}_{-17}$ | ¹ LEES | 13B | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------|-------------------|-----|---|

| | | | |
|--------------------|---------------------|------|--------------------------|
| 137 $^{+35}_{-46}$ | ^{2,3} AAIJ | 12AQ | LHCB $p\bar{p}$ at 7 TeV |
|--------------------|---------------------|------|--------------------------|

| | | | |
|-----------------------------------|------------------------|----|---|
| 136.7 $^{+13.0}_{-15.8} \pm 23.2$ | ⁴ POLUEKTOV | 10 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-----------------------------------|------------------------|----|---|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|--------------------|-----------------------|----|---|
| 129.9 ± 15.0 ± 6.0 | ^{3,5} AIHARA | 12 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------|-----------------------|----|---|

| | | | |
|--------------------------|------------------------------|------|-------------------|
| 119 $^{+19}_{-20} \pm 4$ | ⁶ DEL-AMO-SA..10F | BABR | Repl. by LEES 13B |
|--------------------------|------------------------------|------|-------------------|

| | | | |
|--------------------------|---------------------|------|-----------------------------------|
| 109 $^{+27}_{-30} \pm 8$ | ⁷ AUBERT | 08AL | BABR Repl. by DEL-AMO-SANCHEZ 10F |
|--------------------------|---------------------|------|-----------------------------------|

| | | | |
|-----------------------------------|------------------------|----|----------------------------|
| 145.7 $^{+19.0}_{-19.7} \pm 23.1$ | ⁸ POLUEKTOV | 06 | BELL Repl. by POLUEKTOV 10 |
|-----------------------------------|------------------------|----|----------------------------|

| | | | |
|-------------------------|-----------------------|-----|---------------------------|
| 104 ± 45 $^{+23}_{-32}$ | ⁹ AUBERT,B | 05Y | BABR Repl. by AUBERT 08AL |
|-------------------------|-----------------------|-----|---------------------------|

¹ Reports combination of published measurements using GGSZ, GLW, and ADS methods.² Reports combined statistical and systematic uncertainties.³ Uses binned Dalitz plot of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ decays from $B^+ \rightarrow \bar{D}^0 K^+$. Measurement of strong phases in $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ Dalitz plot from LIBBY 10 is used as input.⁴ Uses Dalitz plot analysis of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ decays from $B^+ \rightarrow \bar{D}^0 K^+$ modes. The corresponding two standard deviation interval is $102.2^\circ < \delta_B < 162.3^\circ$.⁵ We combined the systematics in quadrature. The authors report separately the contribution to the systematic uncertainty due to the uncertainty on the bin-averaged strong phase difference between D^0 and \bar{D}^0 amplitudes.⁶ Uses Dalitz plot analysis of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$, $K_S^0 K^+ K^-$ decays from $B^+ \rightarrow D^{(*)} K^{(*)+}$ modes. The corresponding two standard deviation interval is $75^\circ < \delta_B < 157^\circ$.⁷ Uses Dalitz plot analysis of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ and $\bar{D}^0 \rightarrow K_S^0 K^+ K^-$ decays coming from $B^\pm \rightarrow D^{(*)} K^{(*)\pm}$ modes.⁸ Uses a Dalitz plot analysis of the $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ decays; Combines the DK^+ , $D^* K^+$ and DK^{*+} modes.⁹ Uses a Dalitz analysis of neutral D decays to $K_S^0 \pi^+ \pi^-$ in the processes $B^\pm \rightarrow D^{(*)} K^\pm$, $D^* \rightarrow D\pi^0$, $D\gamma$.

NODE=S041DRX;LINKAGE=LE

NODE=S041DRX;LINKAGE=AA

NODE=S041DRX;LINKAGE=AH

NODE=S041DRX;LINKAGE=PU

NODE=S041DRX;LINKAGE=AI

NODE=S041DRX;LINKAGE=DE

NODE=S041DRX;LINKAGE=AB

NODE=S041DRX;LINKAGE=PO

NODE=S041DRX;LINKAGE=AU

 $r_B(B^+ \rightarrow \bar{D}^0 K^{*+})$ r_B and δ_B are the amplitude ratio and relative strong phase between the amplitudes of $A_{CP}(B^+ \rightarrow D^0 K^{*+})$ and $A_{CP}(B^+ \rightarrow \bar{D}^0 K^{*+})$,

NODE=S041ARZ

NODE=S041ARZ

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

0.17 ± 0.11 OUR AVERAGE

Error includes scale factor of 2.3. [0.34 ± 0.09 OUR 2012 AVERAGE Scale factor = 1.3]

| | | | |
|----------------------------|-------------------|-----|---|
| 0.143 $^{+0.048}_{-0.049}$ | ¹ LEES | 13B | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|----------------------------|-------------------|-----|---|

| | | | |
|--------------------------------------|------------------------|----|---|
| 0.564 $^{+0.216}_{-0.155} \pm 0.093$ | ² POLUEKTOV | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------------------------|------------------------|----|---|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|----------------------------|------------------------------|------|-------------------|
| 0.166 $^{+0.073}_{-0.069}$ | ³ DEL-AMO-SA..10F | BABR | Repl. by LEES 13B |
|----------------------------|------------------------------|------|-------------------|

| | | | |
|-------------|---------------------|------|------------------------|
| 0.31 ± 0.07 | ⁴ AUBERT | 09AJ | BABR Repl. by LEES 13B |
|-------------|---------------------|------|------------------------|

| | | | |
|--------------------------------------|---------------------|------|---------------------------|
| 0.181 $^{+0.088}_{-0.108} \pm 0.042$ | ⁵ AUBERT | 08AL | BABR Repl. by AUBERT 09AJ |
|--------------------------------------|---------------------|------|---------------------------|

NODE=S041ARZ

NEW

¹ Reports combination of published measurements using GGSZ, GLW, and ADS methods.

² Uses a Dalitz plot analysis of the $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ decays; Combines the DK^+ , $D^* K^+$ and DK^{*+} modes.

³ DEL-AMO-SANCHEZ 10F reports $r_B \cdot k = 0.149_{-0.062}^{+0.066}$ for $k = 0.9$.

⁴ Obtained by combining the GLW and ADS methods. The 2-sigma range corresponds to [0.17, 0.43].

⁵ Uses Dalitz plot analysis of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ and $\bar{D}^0 \rightarrow K_S^0 K^+ K^-$ decays coming from $B^\pm \rightarrow D^{(*)} K^{(*)\pm}$ modes.

NODE=S041ARZ;LINKAGE=LE
NODE=S041ARZ;LINKAGE=PO

NODE=S041ARZ;LINKAGE=DE
NODE=S041ARZ;LINKAGE=AU

NODE=S041ARZ;LINKAGE=AB

$\delta_B(B^+ \rightarrow D^0 K^{*+})$

| VALUE (°) | DOCUMENT ID | TECN | COMMENT |
|-----------------------------|---|------|---------|
| 155 ± 70 OUR AVERAGE | Error includes scale factor of 2.0. [(157 ± 70)° OUR 2012 AVERAGE Scale factor = 2.0] | | |

NODE=S041DRZ
NODE=S041DRZ
NEW

| | | | | |
|----------|-------------------|-----|------|------------------------------------|
| 101 ± 43 | ¹ LEES | 13B | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|----------|-------------------|-----|------|------------------------------------|

| | | | | |
|--|------------------------|----|------|------------------------------------|
| 242.6 ^{+20.2} _{-23.2} ± 49.4 | ² POLUEKTOV | 06 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--|------------------------|----|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|----------|-----------------|------|-------------------|
| 111 ± 32 | DEL-AMO-SA..10F | BABR | Repl. by LEES 13B |
|----------|-----------------|------|-------------------|

| | | | | |
|--|---------------------|------|------|-------------------|
| 104 ⁺³⁹ ₋₃₇ ± 18 | ³ AUBERT | 08AL | BABR | Repl. by LEES 13B |
|--|---------------------|------|------|-------------------|

¹ Reports combination of published measurements using GGSZ, GLW, and ADS methods.

² Uses a Dalitz plot analysis of the $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ decays; Combines the DK^+ , $D^* K^+$ and DK^{*+} modes.

³ Uses Dalitz plot analysis of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ and $\bar{D}^0 \rightarrow K_S^0 K^+ K^-$ decays coming from $B^\pm \rightarrow D^{(*)} K^{(*)\pm}$ modes.

NODE=S041DRZ;LINKAGE=LE
NODE=S041DRZ;LINKAGE=PO

NODE=S041DRZ;LINKAGE=AB

$A_{CP}(B^+ \rightarrow [K^- \pi^+]_D K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|-------------|------|---------|
| -0.58 ± 0.21 OUR AVERAGE | | | |

NODE=S041AC0
NODE=S041AC0

| | | | | |
|---------------------|----------|------|-----|------------------------|
| -0.82 ± 0.44 ± 0.09 | AALTONEN | 11AJ | CDF | $p\bar{p}$ at 1.96 TeV |
|---------------------|----------|------|-----|------------------------|

| | | | | |
|---|-------|----|------|------------------------------------|
| -0.39 ^{+0.26+0.04} _{-0.28-0.03} | HORII | 11 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|-------|----|------|------------------------------------|

| | | | |
|--|-----------------|------|------------------------------------|
| -0.86 ± 0.47 ^{+0.12} _{-0.16} | DEL-AMO-SA..10H | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--|-----------------|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|--|-------|----|------|-------------------|
| -0.1 ^{+0.8} _{-1.0} ± 0.4 | HORII | 08 | BELL | Repl. by HORII 11 |
|--|-------|----|------|-------------------|

| | | | | |
|--|-------|----|------|-------------------|
| +0.88 ^{+0.77} _{-0.62} ± 0.06 | SAIGO | 05 | BELL | Repl. by HORII 08 |
|--|-------|----|------|-------------------|

$A_{CP}(B^+ \rightarrow [K^- \pi^+]_D K^*(892)^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT | |
|----------------------------|-------------|------|---------|------------------------------------|
| -0.34 ± 0.43 ± 0.16 | AUBERT | 09AJ | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AC4
NODE=S041AC4

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|---------------------|----------|-----|------|----------------------|
| -0.22 ± 0.61 ± 0.17 | AUBERT,B | 05V | BABR | Repl. by AUBERT 09AJ |
|---------------------|----------|-----|------|----------------------|

$A_{CP}(B^+ \rightarrow [K^- \pi^+]_D \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------------------|-------------|------|---------|
| 0.00 ± 0.09 OUR AVERAGE | | | |

NODE=S041AC1
NODE=S041AC1

| | | | | |
|--------------------|----------|------|-----|------------------------|
| 0.13 ± 0.25 ± 0.02 | AALTONEN | 11AJ | CDF | $p\bar{p}$ at 1.96 TeV |
|--------------------|----------|------|-----|------------------------|

| | | | | |
|--|-------|----|------|------------------------------------|
| -0.04 ± 0.11 ^{+0.02} _{-0.01} | HORII | 11 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--|-------|----|------|------------------------------------|

| | | | |
|--------------------|-------------------|------|------------------------------------|
| 0.03 ± 0.17 ± 0.04 | DEL-AMO-SA... 10H | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------|-------------------|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|--|-------|----|------|-------------------|
| -0.02 ^{+0.15} _{-0.16} ± 0.04 | HORII | 08 | BELL | Repl. by HORII 11 |
|--|-------|----|------|-------------------|

| | | | | |
|--|-------|----|------|-------------------|
| +0.30 ^{+0.29} _{-0.25} ± 0.06 | SAIGO | 05 | BELL | Repl. by HORII 08 |
|--|-------|----|------|-------------------|

$A_{CP}(B^+ \rightarrow [K^- \pi^+]_{(D\pi)} \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|----------------------------|-----------------|------|------------------------------------|
| -0.09 ± 0.27 ± 0.05 | DEL-AMO-SA..10H | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AC6
NODE=S041AC6

$A_{CP}(B^+ \rightarrow [K^- \pi^+]_{(D\gamma)} \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|----------------------------|-----------------|------|------------------------------------|
| -0.65 ± 0.55 ± 0.22 | DEL-AMO-SA..10H | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AC7
NODE=S041AC7

$A_{CP}(B^+ \rightarrow [K^- \pi^+]_{(D\pi)} K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------|-----------------|------|------------------------------------|
| 0.77 ± 0.35 ± 0.12 | DEL-AMO-SA..10H | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AC8
NODE=S041AC8

$A_{CP}(B^+ \rightarrow [K^- \pi^+]_D K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|------------------|------|------------------------------------|
| $0.36 \pm 0.94^{+0.25}_{-0.41}$ | DEL-AMO-SA...10H | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AC9
NODE=S041AC9

 $A_{CP}(B^+ \rightarrow [\pi^+ \pi^- \pi^0]_D K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------|---------------------|------|---|
| $-0.02 \pm 0.15 \pm 0.03$ | ¹ AUBERT | 07BJ | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AC2
NODE=S041AC2

• • • We do not use the following data for averages, fits, limits, etc. • • •

$-0.02 \pm 0.16 \pm 0.03$ AUBERT,B 05T BABR Repl. by AUBERT 07BJ

¹ Uses a Dalitz plot analysis of $D^0 \rightarrow \pi^+ \pi^- \pi^0$. Also reports the one-sigma regions: $0.06 < r_B < 0.78$, $-30^\circ < \gamma < 76^\circ$, and $-27^\circ < \delta < 78^\circ$.

NODE=S041AC2;LINKAGE=UB

 $A_{CP}(B^+ \rightarrow D_{CP(+1)} K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|----------------------------------|---|------|---------|
| 0.170 ± 0.033 OUR AVERAGE | Error includes scale factor of 1.2. [0.24 ± 0.06 OUR 2012 AVERAGE Scale factor = 1.1] | | |

NODE=S041AY3
NODE=S041AY3

0.145 ± 0.032 ± 0.010

¹ AAIJ 12M LHCB pp at 7 TeV

0.39 ± 0.17 ± 0.04

AALTONEN 10A CDF $p\bar{p}$ at 1.96 TeV

0.25 ± 0.06 ± 0.02

² DEL-AMO-SA...10G BABR $e^+ e^- \rightarrow \Upsilon(4S)$

0.06 ± 0.14 ± 0.05

ABE 06 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.27 ± 0.09 ± 0.04

AUBERT 08AA BABR Repl. by DEL-AMO-SANCHEZ 10G

0.35 ± 0.13 ± 0.04

AUBERT 06J BABR Repl. by AUBERT 08AA

0.07 ± 0.17 ± 0.06

AUBERT 04N BABR Repl. by AUBERT 06J

0.29 ± 0.26 ± 0.05

³ ABE 03D BELL Repl. by SWAIN 03

0.06 ± 0.19 ± 0.04

⁴ SWAIN 03 BELL Repl. by ABE 06

NEW

¹ AAIJ 12M reports an evidence of direct CP violation in $B^\pm \rightarrow DK^\pm$ decays with a total significance of 5.8 σ .

NODE=S041AY3;LINKAGE=A1

² Reports the first evidence for direct CP violation in $B \rightarrow DK$ decays with 3.6 standard deviations.

NODE=S041AY3;LINKAGE=DE

³ Corresponds to 90% confidence range $-0.14 < A_{CP} < 0.73$.

NODE=S041AY3;LINKAGE=A

⁴ Corresponds to 90% confidence range $-0.26 < A_{CP} < 0.38$.

NODE=S041AY3;LINKAGE=SW

 $A_{ADS}(B^+ \rightarrow DK^+)$

$$A_{ADS}(B^+ \rightarrow DK^+) = \frac{(R_K^- - R_K^+)}{(R_K^- + R_K^+)} \text{ where}$$

$$R_K^- = \Gamma(B^- \rightarrow [K^+ \pi^-]_D K^-) / \Gamma(B^- \rightarrow [K^- \pi^+]_D K^-) \text{ and}$$

$$R_K^+ = \Gamma(B^+ \rightarrow [K^- \pi^+]_D K^+) / \Gamma(B^+ \rightarrow [K^+ \pi^-]_D K^+)$$

NODE=S041AA1

NODE=S041AA1

| VALUE | DOCUMENT ID | TECN | COMMENT |
|----------------------------|-------------|------|--------------------|
| -0.52 ± 0.15 ± 0.02 | AAIJ | 12M | LHCB pp at 7 TeV |

NODE=S041AA1

 $A_{ADS}(B^+ \rightarrow D\pi^+)$

$$A_{ADS}(B^+ \rightarrow D\pi^+) = \frac{(R_\pi^- - R_\pi^+)}{(R_\pi^- + R_\pi^+)} \text{ where}$$

$$R_\pi^- = \Gamma(B^- \rightarrow [K^+ \pi^-]_D \pi^-) / \Gamma(B^- \rightarrow [K^- \pi^+]_D \pi^-) \text{ and}$$

$$R_\pi^+ = \Gamma(B^+ \rightarrow [K^- \pi^+]_D \pi^+) / \Gamma(B^+ \rightarrow [K^+ \pi^-]_D \pi^+)$$

NODE=S041AA2

NODE=S041AA2

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-------------|------|--------------------|
| 0.143 ± 0.062 ± 0.011 | AAIJ | 12M | LHCB pp at 7 TeV |

NODE=S041AA2

 $A_{CP}(B^+ \rightarrow D_{CP(-1)} K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|-------------|------|---------|
| -0.10 ± 0.07 OUR AVERAGE | | | |

NODE=S041AY4
NODE=S041AY4

$-0.09 \pm 0.07 \pm 0.02$

DEL-AMO-SA...10G BABR $e^+ e^- \rightarrow \Upsilon(4S)$

$-0.12 \pm 0.14 \pm 0.05$

ABE 06 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

$-0.09 \pm 0.09 \pm 0.02$

AUBERT 08AA BABR Repl. by DEL-AMO-SANCHEZ 10G

$-0.06 \pm 0.13 \pm 0.04$

AUBERT 06J BABR Repl. by AUBERT 08AA

$-0.22 \pm 0.24 \pm 0.04$

¹ ABE 03D BELL Repl. by SWAIN 03

$-0.19 \pm 0.17 \pm 0.05$

² SWAIN 03 BELL Repl. by ABE 06

¹ Corresponds to 90% confidence range $-0.62 < A_{CP} < 0.18$.

NODE=S041AY4;LINKAGE=A

² Corresponds to 90% confidence range $-0.47 < A_{CP} < 0.11$.

NODE=S041AY4;LINKAGE=SW

$A_{CP}(B^+ \rightarrow \bar{D}^{*0} \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------|-------------|------|---|
| -0.014 ± 0.015 | ABE | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AD5
 NODE=S041AD5

 $A_{CP}(B^+ \rightarrow (D_{CP(+1)}^{*})^0 \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------|-------------|------|---|
| -0.021 ± 0.045 | ABE | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AD6
 NODE=S041AD6

 $A_{CP}(B^+ \rightarrow (D_{CP(-1)}^{*})^0 \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------|-------------|------|---|
| -0.090 ± 0.051 | ABE | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AD7
 NODE=S041AD7

 $A_{CP}(B^+ \rightarrow D^{*0} K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-------------|------|---|
| -0.07 ± 0.04 OUR AVERAGE | | | |
| $-0.06 \pm 0.04 \pm 0.01$ | AUBERT | 08BF | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| -0.089 ± 0.086 | ABE | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AD8
 NODE=S041AD8

 $r_B^*(B^+ \rightarrow D^{*0} K^+)$

r_B^* and δ_B^* are the amplitude ratio and relative strong phase between the amplitudes of $A(B^+ \rightarrow D^{*0} K^+)$ and $A(B^+ \rightarrow \bar{D}^{*0} K^+)$,

NODE=S041ARY
 NODE=S041ARY

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

NODE=S041ARY

$0.114^{+0.023}_{-0.040}$ OUR AVERAGE Error includes scale factor of 1.2. $[0.123^{+0.026}_{-0.029}$ OUR 2012 AVERAGE]

NEW

$0.106^{+0.019}_{-0.036}$ 1 LEES 13B BABR $e^+ e^- \rightarrow \Upsilon(4S)$

$0.196^{+0.072+0.064}_{-0.069-0.017}$ 2 POLUEKTOV 10 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

$0.133^{+0.042}_{-0.039} \pm 0.013$ 3 DEL-AMO-SA..10F BABR Repl. by LEES 13B

$0.096^{+0.035}_{-0.051}$ 4 DEL-AMO-SA..10H BABR Repl. by LEES 13B

$0.135 \pm 0.050 \pm 0.012$ 5 AUBERT 08AL BABR Repl. by DEL-AMO-SANCHEZ 10F

$0.175^{+0.108}_{-0.099} \pm 0.050$ 6 POLUEKTOV 06 BELL Repl. by POLUEKTOV 10

$0.17 \pm 0.10 \pm 0.04$ 7 AUBERT,B 05Y BABR Repl. by AUBERT 08AL

¹ Reports combination of published measurements using GGSZ, GLW, and ADS methods.

² Uses Dalitz plot analysis of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ decays from $B^+ \rightarrow D^{*0} K^+$ modes. The corresponding two standard deviation interval is $0.061 < r_B^* < 0.271$.

³ Uses Dalitz plot analysis of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$, $K_S^0 K^+ K^-$ decays from $B^+ \rightarrow D^{(*)} K^{(*)+}$ modes. The corresponding two standard deviation interval is $0.049 < r_B^* < 0.215$.

⁴ Uses the Cabibbo suppressed decay of $B^+ \rightarrow \bar{D}^* K^+$ followed by $\bar{D}^* \rightarrow \bar{D} \pi^0$ or $\bar{D} \gamma$, and $\bar{D} \rightarrow K^- \pi^+$.

⁵ Uses Dalitz plot analysis of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ and $\bar{D}^0 \rightarrow K_S^0 K^+ K^-$ decays coming from $B^\pm \rightarrow D^{(*)} K^{(*)\pm}$ modes.

⁶ Uses a Dalitz plot analysis of the $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ decays; Combines the DK^+ , $D^* K^+$ and DK^{*+} modes.

⁷ Uses a Dalitz analysis of neutral D decays to $K_S^0 \pi^+ \pi^-$ in the processes $B^\pm \rightarrow D^{(*)} K^\pm$, $D^* \rightarrow D \pi^0$, $D \gamma$.

NODE=S041ARY;LINKAGE=LE
 NODE=S041ARY;LINKAGE=PU

NODE=S041ARY;LINKAGE=DE

NODE=S041ARY;LINKAGE=DL

NODE=S041ARY;LINKAGE=AB

NODE=S041ARY;LINKAGE=PO

NODE=S041ARY;LINKAGE=AU

 $\delta_B^*(B^+ \rightarrow D^{*0} K^+)$

| VALUE (°) | DOCUMENT ID | TECN | COMMENT |
|-----------|-------------|------|---------|
|-----------|-------------|------|---------|

NODE=S041DRY
 NODE=S041DRY

310^{+22}_{-28} OUR AVERAGE Error includes scale factor of 1.3. $[(300 \pm 30)^\circ$ OUR 2012 AVERAGE Scale factor = 1.7]

NEW

294 $^{+21}_{-31}$ 1 LEES 13B BABR $e^+ e^- \rightarrow \Upsilon(4S)$

$341.9^{+18.0}_{-19.6} \pm 23.1$ 2 POLUEKTOV 10 BELL $e^+ e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|--|------------------------------|------|-----------------------------------|
| 278 ±21 ± 6 | ³ DEL-AMO-SA..10F | BABR | Repl. by LEES 13B |
| 297 $\begin{smallmatrix} +27 \\ -29 \end{smallmatrix}$ ± 6.4 | ⁴ AUBERT | 08AL | BABR Repl. by DEL-AMO-SANCHEZ 10F |
| 302.0 $\begin{smallmatrix} +33.8 \\ -35.1 \end{smallmatrix}$ ±23.7 | ⁵ POLUEKTOV | 06 | BELL Repl. by POLUEKTOV 10 |
| 296 ±41 $\begin{smallmatrix} +20 \\ -19 \end{smallmatrix}$ | ⁶ AUBERT,B | 05Y | BABR Repl. by AUBERT 08AL |

¹ Reports combination of published measurements using GGSZ, GLW, and ADS methods. We added 360° to the value of $(-66 \begin{smallmatrix} +21 \\ -31 \end{smallmatrix})^\circ$ quoted by LEES 13B.

² Uses Dalitz plot analysis of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ decays from $B^+ \rightarrow D^* K^+$ modes. The corresponding two standard deviation interval is $296.5^\circ < \delta_B^* < 382.7^\circ$.

³ Uses Dalitz plot analysis of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$, $K_S^0 K^+ K^-$ decays from $B^+ \rightarrow D^{(*)} K^{(*)+}$ modes. The corresponding two standard deviation interval is $236^\circ < \delta_B^* < 322^\circ$.

⁴ Uses Dalitz plot analysis of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ and $\bar{D}^0 \rightarrow K_S^0 K^+ K^-$ decays coming from $B^\pm \rightarrow D^{(*)} K^{(*)\pm}$ modes.

⁵ Uses a Dalitz plot analysis of the $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ decays; Combines the DK^+ , $D^* K^+$ and DK^{*+} modes.

⁶ Uses a Dalitz analysis of neutral D decays to $K_S^0 \pi^+ \pi^-$ in the processes $B^\pm \rightarrow D^{(*)} K^\pm$, $D^* \rightarrow D\pi^0$, $D\gamma$.

NODE=S041DRY;LINKAGE=LE

NODE=S041DRY;LINKAGE=PU

NODE=S041DRY;LINKAGE=DE

NODE=S041DRY;LINKAGE=AB

NODE=S041DRY;LINKAGE=PO

NODE=S041DRY;LINKAGE=AU

$A_{CP}(B^+ \rightarrow D_{CP(+1)}^{*0} K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------------------------------|-------------|------|---|
| -0.12±0.08 OUR AVERAGE | | | |
| -0.11±0.09±0.01 | AUBERT | 08BF | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| -0.20±0.22±0.04 | ABE | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AC+
NODE=S041AC+

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|---|--------|-----|---------------------------|
| -0.10±0.23 $\begin{smallmatrix} +0.03 \\ -0.04 \end{smallmatrix}$ | AUBERT | 05N | BABR Repl. by AUBERT 08BF |
|---|--------|-----|---------------------------|

$A_{CP}(B^+ \rightarrow D_{CP(-1)}^* K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-------------|------|---|
| 0.07±0.10 OUR AVERAGE | | | |
| +0.06±0.10±0.02 | AUBERT | 08BF | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| +0.13±0.30±0.08 | ABE | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AD1
NODE=S041AD1

$A_{CP}(B^+ \rightarrow D_{CP(+1)} K^*(892)^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------|-------------|------|---|
| +0.09±0.13±0.06 | AUBERT | 09AJ | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AD+
NODE=S041AD+

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|-----------------|----------|-----|---------------------------|
| -0.08±0.19±0.08 | AUBERT,B | 05U | BABR Repl. by AUBERT 09AJ |
|-----------------|----------|-----|---------------------------|

$A_{CP}(B^+ \rightarrow D_{CP(-1)} K^*(892)^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------|-------------|------|---|
| -0.23±0.21±0.07 | AUBERT | 09AJ | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AD-
NODE=S041AD-

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|-----------------|----------|-----|---------------------------|
| -0.26±0.40±0.12 | AUBERT,B | 05U | BABR Repl. by AUBERT 09AJ |
|-----------------|----------|-----|---------------------------|

$A_{CP}(B^+ \rightarrow D_s^+ \phi)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------|-------------|------|--------------------|
| -0.01±0.41±0.03 | AAIJ | 13R | LHCB pp at 7 TeV |

NODE=S041ADP
NODE=S041ADP

$A_{CP}(B^+ \rightarrow D^{*+} \bar{D}^{*0})$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------|-------------|------|---|
| -0.15±0.11±0.02 | AUBERT,B | 06A | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AS1
NODE=S041AS1

$A_{CP}(B^+ \rightarrow D^{*+} \bar{D}^0)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------|-------------|------|---|
| -0.06±0.13±0.02 | AUBERT,B | 06A | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AS2
NODE=S041AS2

$A_{CP}(B^+ \rightarrow D^+ \bar{D}^{*0})$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-----------------------|-------------|------|---|
| 0.13±0.18±0.04 | AUBERT,B | 06A | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AS3
NODE=S041AS3

$A_{CP}(B^+ \rightarrow D^+ \bar{D}^0)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------------------------------|-------------|----------|------------------------------------|
| -0.03±0.07 OUR AVERAGE | | | |
| 0.00±0.08±0.02 | ADACHI | 08 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| -0.13±0.14±0.02 | AUBERT,B | 06A BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AS4
 NODE=S041AS4

 $A_{CP}(B^+ \rightarrow K_S^0 \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|------------------------|----------|------------------------------------|
| -0.014±0.019 OUR AVERAGE | | | |
| [0.009 ± 0.029 OUR 2012 AVERAGE Scale factor = 1.2] | | | |
| -0.011±0.021±0.006 | DUH | 13 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| -0.029±0.039±0.010 | ¹ AUBERT,BE | 06C BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.18 ±0.24 | ² CHEN | 00 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | |
| 0.03 ±0.03 ±0.01 | LIN | 07 BELL | Repl. by DUH 13 |
| -0.09 ±0.05 ±0.01 | ³ AUBERT,BE | 05E BABR | Repl. by AUBERT,BE 06C |
| 0.05 ±0.05 ±0.01 | ⁴ CHAO | 05A BELL | Repl. by LIN 07 |
| -0.05 ±0.08 ±0.01 | ⁵ AUBERT | 04M BABR | Repl. by AUBERT,BE 05E |
| 0.07 ^{+0.09} _{-0.08} ^{+0.01} _{-0.03} | ⁶ UNNO | 03 BELL | Repl. by CHAO 05A |
| 0.46 ±0.15 ±0.02 | ⁷ CASEY | 02 BELL | Repl. by UNNO 03 |
| 0.098 ^{+0.430} _{-0.343} ^{+0.020} _{-0.063} | ⁸ ABE | 01K BELL | Repl. by CASEY 02 |
| -0.21 ±0.18 ±0.03 | ⁹ AUBERT | 01E BABR | Repl. by AUBERT 04M |

NODE=S041AX4
 NODE=S041AX4
 NEW

- 1 Corresponds to 90% confidence range $-0.092 < A_{CP} < 0.036$.
- 2 Corresponds to 90% confidence range $-0.22 < A_{CP} < 0.56$.
- 3 Corresponds to 90% confidence range $-0.16 < A_{CP} < -0.02$.
- 4 Corresponds to 90% confidence range $-0.04 < A_{CP} < 0.13$.
- 5 Corresponds to 90% confidence range $-0.18 < A_{CP} < 0.08$.
- 6 Corresponds to 90% confidence range $-0.10 < A_{CP} < +0.22$.
- 7 Corresponds to 90% confidence range $+0.19 < A_{CP} < +0.72$.
- 8 Corresponds to 90% confidence range $-0.53 < A_{CP} < 0.82$.
- 9 Corresponds to 90% confidence range $-0.51 < A_{CP} < 0.09$.

NODE=S041AX4;LINKAGE=AE
 NODE=S041AX4;LINKAGE=A
 NODE=S041AX4;LINKAGE=AB
 NODE=S041AX4;LINKAGE=CO
 NODE=S041AX4;LINKAGE=AU
 NODE=S041AX4;LINKAGE=UN
 NODE=S041AX4;LINKAGE=CA
 NODE=S041AX4;LINKAGE=AX
 NODE=S041AX4;LINKAGE=L3

 $A_{CP}(B^+ \rightarrow K^+ \pi^0)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|---------------------|-----------|------------------------------------|
| 0.037±0.021 OUR AVERAGE | | | |
| [0.051 ± 0.025 OUR 2012 AVERAGE] | | | |
| 0.043±0.024±0.002 | DUH | 13 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.030±0.039±0.010 | AUBERT | 07BC BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| -0.29 ±0.23 | ¹ CHEN | 00 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | |
| 0.07 ±0.03 ±0.01 | LIN | 08 BELL | Repl. by DUH 13 |
| 0.06 ±0.06 ±0.01 | ² AUBERT | 05L BABR | Repl. by AUBERT 07BC |
| 0.06 ±0.06 ±0.02 | ² CHAO | 05A BELL | Repl. by CHAO 04B |
| 0.04 ±0.05 ±0.02 | ³ CHAO | 04B BELL | Repl. by LIN 08 |
| -0.09 ±0.09 ±0.01 | ⁴ AUBERT | 03L BABR | Repl. by AUBERT 05L |
| -0.02 ±0.19 ±0.02 | ⁵ CASEY | 02 BELL | Repl. by CHAO 04B |
| -0.059 ^{+0.222} _{-0.196} ^{+0.055} _{-0.017} | ⁶ ABE | 01K BELL | Repl. by CASEY 02 |
| 0.00 ±0.18 ±0.04 | ⁷ AUBERT | 01E BABR | Repl. by AUBERT 03L |

NODE=S041AX3
 NODE=S041AX3
 NEW

- 1 Corresponds to 90% confidence range $-0.67 < A_{CP} < 0.09$.
- 2 Corresponds to a 90% CL interval of $-0.06 < A_{CP} < 0.18$.
- 3 Corresponds to 90% CL interval of $-0.05 < A_{CP} < 0.13$.
- 4 Corresponds to 90% confidence range $-0.24 < A_{CP} < 0.06$.
- 5 Corresponds to 90% confidence range $-0.35 < A_{CP} < +0.30$.
- 6 Corresponds to 90% confidence range $-0.40 < A_{CP} < 0.36$.
- 7 Corresponds to 90% confidence range $-0.30 < A_{CP} < +0.30$.

NODE=S041AX3;LINKAGE=A
 NODE=S041AX3;LINKAGE=CO
 NODE=S041AX3;LINKAGE=CH
 NODE=S041AX3;LINKAGE=3L
 NODE=S041AX3;LINKAGE=CA
 NODE=S041AX3;LINKAGE=AX
 NODE=S041AX3;LINKAGE=L3

 $A_{CP}(B^+ \rightarrow \eta' K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------------|-----------|------------------------------------|
| 0.013±0.017 OUR AVERAGE | | | |
| 0.008 ^{+0.017} _{-0.018} ±0.009 | AUBERT | 09AV BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.028±0.028±0.021 | SCHUEMANN | 06 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.03 ±0.12 | ¹ CHEN | 00 CLE2 | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AX5
 NODE=S041AX5

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|------------------------------|---------------------|------|------|-----------------------|
| $0.010 \pm 0.022 \pm 0.006$ | AUBERT | 07AE | BABR | Repl. by AUBERT 09AV |
| $0.033 \pm 0.028 \pm 0.005$ | ² AUBERT | 05M | BABR | Repl. by AUBERT 07AE |
| $0.037 \pm 0.045 \pm 0.011$ | ³ AUBERT | 03W | BABR | Repl. by AUBERT 05M |
| $-0.11 \pm 0.11 \pm 0.02$ | ⁴ AUBERT | 02E | BABR | Repl. by AUBERT 05M |
| $-0.015 \pm 0.070 \pm 0.009$ | ⁵ CHEN | 02B | BELL | Repl. by SCHUEMANN 06 |
| $0.06 \pm 0.15 \pm 0.01$ | ⁶ ABE | 01M | BELL | Repl. by CHEN 02B |

¹ Corresponds to 90% confidence range $-0.17 < A_{CP} < 0.23$.

² Corresponds to 90% confidence range $-0.012 < A_{CP} < 0.078$.

³ Corresponds to 90% confidence range $-0.04 < A_{CP} < 0.11$.

⁴ Corresponds to 90% confidence range $-0.28 < A_{CP} < 0.07$.

⁵ Corresponds to 90% confidence range $-0.13 < A_{CP} < 0.10$.

⁶ Corresponds to 90% confidence range $-0.20 < A_{CP} < 0.32$.

NODE=S041AX5;LINKAGE=A
 NODE=S041AX5;LINKAGE=AU
 NODE=S041AX5;LINKAGE=BW
 NODE=S041AX5;LINKAGE=AY
 NODE=S041AX5;LINKAGE=C
 NODE=S041AX5;LINKAGE=AX

$A_{CP}(B^+ \rightarrow \eta' K^*(892)^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|------------------|------|------------------------------------|
| $-0.26 \pm 0.27 \pm 0.02$ | DEL-AMO-SA...10A | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CR7
 NODE=S041CR7

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|----------------------------------|---------------------|-----|------|------------------------------|
| $-0.30^{+0.33}_{-0.37} \pm 0.02$ | ¹ AUBERT | 07E | BABR | Repl. by DEL-AMO-SANCHEZ 10A |
|----------------------------------|---------------------|-----|------|------------------------------|

¹ Reports A_{CP} with the opposite sign convention.

NODE=S041CR7;LINKAGE=OS

$A_{CP}(B^+ \rightarrow \eta' K_0^*(1430)^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|------------------|------|------------------------------------|
| $0.06 \pm 0.20 \pm 0.02$ | DEL-AMO-SA...10A | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CT7
 NODE=S041CT7

$A_{CP}(B^+ \rightarrow \eta' K_2^*(1430)^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|------------------|------|------------------------------------|
| $0.15 \pm 0.13 \pm 0.02$ | DEL-AMO-SA...10A | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CT8
 NODE=S041CT8

$A_{CP}(B^+ \rightarrow \eta K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------|------|---|
| -0.37 ± 0.08 OUR AVERAGE | | | |
| $-0.38 \pm 0.11 \pm 0.01$ | HOI | 12 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $-0.36 \pm 0.11 \pm 0.03$ | AUBERT | 09AV | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CP3
 NODE=S041CP3

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|---------------------------|----------|------|------|-----------------------|
| $-0.22 \pm 0.11 \pm 0.01$ | AUBERT | 07AE | BABR | Repl. by AUBERT 09AV |
| $-0.39 \pm 0.16 \pm 0.03$ | CHANG | 07B | BELL | Repl. by HOI 12 |
| $-0.20 \pm 0.15 \pm 0.01$ | AUBERT,B | 05K | BABR | Repl. by AUBERT 07AE |
| $-0.49 \pm 0.31 \pm 0.07$ | CHANG | 05A | BELL | Repl. by CHANG 07B |
| $-0.52 \pm 0.24 \pm 0.01$ | AUBERT | 04H | BABR | Repl. by AUBERT,B 05K |

$A_{CP}(B^+ \rightarrow \eta K^*(892)^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---|
| 0.02 ± 0.06 OUR AVERAGE | | | |
| $0.03 \pm 0.10 \pm 0.01$ | WANG | 07B | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $0.01 \pm 0.08 \pm 0.02$ | AUBERT,B | 06H | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CP1
 NODE=S041CP1

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|--------------------------|----------|-----|------|-----------------------|
| $0.13 \pm 0.14 \pm 0.02$ | AUBERT,B | 04D | BABR | Repl. by AUBERT,B 06H |
|--------------------------|----------|-----|------|-----------------------|

$A_{CP}(B^+ \rightarrow \eta K_0^*(1430)^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------|------|---|
| $0.05 \pm 0.13 \pm 0.02$ | AUBERT,B | 06H | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CR5
 NODE=S041CR5

$A_{CP}(B^+ \rightarrow \eta K_2^*(1430)^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---|
| $-0.45 \pm 0.30 \pm 0.02$ | AUBERT,B | 06H | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CR6
 NODE=S041CR6

$A_{CP}(B^+ \rightarrow \omega K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---|
| 0.02 ± 0.05 OUR AVERAGE | | | |
| $-0.01 \pm 0.07 \pm 0.01$ | AUBERT | 07AE | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $0.05^{+0.08}_{-0.07} \pm 0.01$ | JEN | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AY1
 NODE=S041AY1

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|---------------------------------|-------------------|-----|------|-----------------------|
| $0.05 \pm 0.09 \pm 0.01$ | AUBERT,B | 06E | BABR | Repl. by AUBERT 07AE |
| $-0.09 \pm 0.17 \pm 0.01$ | AUBERT | 04H | BABR | Repl. by AUBERT,B 06E |
| $0.06^{+0.21}_{-0.18} \pm 0.01$ | ¹ WANG | 04A | BELL | Repl. by JEN 06 |
| $-0.21 \pm 0.28 \pm 0.03$ | ² LU | 02 | BELL | Repl. by WANG 04A |

¹ Corresponds to 90% CL interval $0.15 < A_{CP} < 0.90$

² Corresponds to 90% confidence range $-0.70 < A_{CP} < +0.38$.

NODE=S041AY1;LINKAGE=WA
NODE=S041AY1;LINKAGE=A

$A_{CP}(B^+ \rightarrow \omega K^{*+})$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---|
| $+0.29 \pm 0.35 \pm 0.02$ | AUBERT | 09H | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CT0
NODE=S041CT0

$A_{CP}(B^+ \rightarrow \omega(K\pi)_0^{*+})$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---|
| $-0.10 \pm 0.09 \pm 0.02$ | AUBERT | 09H | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CT2
NODE=S041CT2

$A_{CP}(B^+ \rightarrow \omega K_2^{*+}(1430)^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---|
| $+0.14 \pm 0.15 \pm 0.02$ | AUBERT | 09H | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CT3
NODE=S041CT3

$A_{CP}(B^+ \rightarrow K^{*0} \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------------------------------|------|---------|
| -0.04 ± 0.09 OUR AVERAGE | Error includes scale factor of 2.1. | | |

NODE=S041CQ4
NODE=S041CQ4

| | | | |
|-------------------------------------|---------|------|---|
| $0.032 \pm 0.052^{+0.016}_{-0.013}$ | AUBERT | 08AI | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $-0.149 \pm 0.064 \pm 0.022$ | GARMASH | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|-------------------------------------|----------|-----|---------------------------|
| $0.068 \pm 0.078^{+0.070}_{-0.067}$ | AUBERT,B | 05N | BABR Repl. by AUBERT 08AI |
|-------------------------------------|----------|-----|---------------------------|

$A_{CP}(B^+ \rightarrow K^{*+}(892) \pi^0)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---|
| $-0.06 \pm 0.24 \pm 0.04$ | LEES | 11I | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CP8
NODE=S041CP8

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|--------------------------|--------|-----|------------------------|
| $0.04 \pm 0.29 \pm 0.05$ | AUBERT | 05X | BABR Repl. by LEES 11I |
|--------------------------|--------|-----|------------------------|

$A_{CP}(B^+ \rightarrow K^+ \pi^- \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---------|
| 0.038 ± 0.022 OUR AVERAGE | | | |

NODE=S041AY6
NODE=S041AY6

| | | | |
|-----------------------------|---------|------|---|
| $0.028 \pm 0.020 \pm 0.023$ | AUBERT | 08AI | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $0.049 \pm 0.026 \pm 0.020$ | GARMASH | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|------------------------------|----------|-----|----------------------------|
| $-0.013 \pm 0.037 \pm 0.011$ | AUBERT,B | 05N | BABR Repl. by AUBERT 08AI |
| $0.01 \pm 0.07 \pm 0.03$ | AUBERT | 03M | BABR Repl. by AUBERT,B 05N |

$A_{CP}(B^+ \rightarrow K^+ K^- K^+ \text{ nonresonant})$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---|
| $0.060 \pm 0.044 \pm 0.019$ | LEES | 120 | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CU6
NODE=S041CU6

$A_{CP}(B^+ \rightarrow f(980)^0 K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------------|------|---|
| $-0.08 \pm 0.08 \pm 0.04$ | ¹ LEES | 120 | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CU7
NODE=S041CU7

¹ Measured in the $B^+ \rightarrow K^+ K^- K^+$ decay.

NODE=S041CU7;LINKAGE=LE

$A_{CP}(B^+ \rightarrow f_2(1270) K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---------|
| $-0.68^{+0.19}_{-0.17}$ OUR AVERAGE | | | |

NODE=S041CR0
NODE=S041CR0

| | | | |
|----------------------------------|---------|------|---|
| $-0.85 \pm 0.22^{+0.26}_{-0.13}$ | AUBERT | 08AI | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $-0.59 \pm 0.22 \pm 0.036$ | GARMASH | 06 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

$A_{CP}(B^+ \rightarrow f_0(1500) K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---|
| $0.28 \pm 0.26^{+0.15}_{-0.14}$ | AUBERT | 08AI | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CS5
NODE=S041CS5

$A_{CP}(B^+ \rightarrow f'_2(1525)^0 K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

NODE=S041CQ5
NODE=S041CQ5

 $-0.08^{+0.05}_{-0.04}$ OUR AVERAGE

NEW

$[-0.09^{+0.05}_{-0.04}$ OUR 2012 AVERAGE Scale factor = 1.1]

| | | | | |
|--------------------------|-------------------|-----|------|------------------------------------|
| $0.18 \pm 0.18 \pm 0.04$ | ¹ LEES | 11I | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------------|-------------------|-----|------|------------------------------------|

| | | | | |
|--------------------------------------|--------|------|------|------------------------------------|
| $-0.106 \pm 0.050^{+0.036}_{-0.015}$ | AUBERT | 08AI | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------------------------|--------|------|------|------------------------------------|

| | | | | |
|--------------------------------------|---------|----|------|------------------------------------|
| $-0.077 \pm 0.065^{+0.046}_{-0.026}$ | GARMASH | 06 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------------------------|---------|----|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|--------------------------|-------------------|-----|------|------------------------------------|
| $0.14 \pm 0.10 \pm 0.04$ | ² LEES | 12O | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--------------------------|-------------------|-----|------|------------------------------------|

| | | | | |
|---------------------------|---------------------|-----|------|-------------------|
| $-0.31 \pm 0.25 \pm 0.08$ | ³ AUBERT | 06O | BABR | Repl. by LEES 12O |
|---------------------------|---------------------|-----|------|-------------------|

| | | | | |
|-------------------------------------|----------|-----|------|----------------------|
| $0.088 \pm 0.095^{+0.097}_{-0.056}$ | AUBERT,B | 05N | BABR | Repl. by AUBERT 08AI |
|-------------------------------------|----------|-----|------|----------------------|

¹ Measured in $B^+ \rightarrow f_0 K^+$ with $f_0 \rightarrow \pi^0 \pi^0$ decay.

² Measured in the $B^+ \rightarrow K^+ K^- K^+$ decay assuming $A_{CP}(B^+ \rightarrow f'_2(1525)^0 K^+) = A_{CP}(B^+ \rightarrow f_0(1500)^0 K^+) = A_{CP}(B^+ \rightarrow f_0(1710)^0 K^+)$

³ Measured in the $B^+ \rightarrow K^+ K^- K^+$ decay.

NODE=S041CQ5;LINKAGE=LE
NODE=S041CQ5;LINKAGE=LA

NODE=S041CQ5;LINKAGE=AE

 $A_{CP}(B^+ \rightarrow \rho^0 K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

NODE=S041CQ6
NODE=S041CQ6

 0.37 ± 0.10 OUR AVERAGE

| | | | | |
|---------------------------------|--------|------|------|------------------------------------|
| $0.44 \pm 0.10^{+0.06}_{-0.14}$ | AUBERT | 08AI | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---------------------------------|--------|------|------|------------------------------------|

| | | | | |
|---------------------------------|---------|----|------|------------------------------------|
| $0.30 \pm 0.11^{+0.11}_{-0.04}$ | GARMASH | 06 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---------------------------------|---------|----|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|---------------------------------|----------|-----|------|----------------------|
| $0.32 \pm 0.13^{+0.10}_{-0.08}$ | AUBERT,B | 05N | BABR | Repl. by AUBERT 08AI |
|---------------------------------|----------|-----|------|----------------------|

 $A_{CP}(B^+ \rightarrow K_0^*(1430)^0 \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

NODE=S041CQ7
NODE=S041CQ7

 0.055 ± 0.033 OUR AVERAGE

| | | | | |
|-------------------------------------|--------|------|------|------------------------------------|
| $0.032 \pm 0.035^{+0.034}_{-0.028}$ | AUBERT | 08AI | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------------------------------------|--------|------|------|------------------------------------|

| | | | | |
|-------------------------------------|---------|----|------|------------------------------------|
| $0.076 \pm 0.038^{+0.028}_{-0.022}$ | GARMASH | 06 | BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|-------------------------------------|---------|----|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|--------------------------------------|----------|-----|------|----------------------|
| $-0.064 \pm 0.032^{+0.023}_{-0.026}$ | AUBERT,B | 05N | BABR | Repl. by AUBERT 08AI |
|--------------------------------------|----------|-----|------|----------------------|

 $A_{CP}(B^+ \rightarrow K_2^*(1430)^0 \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

NODE=S041CS4
NODE=S041CS4

| | | | | |
|---|--------|------|------|------------------------------------|
| $0.05 \pm 0.23^{+0.18}_{-0.08}$ | AUBERT | 08AI | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|--------|------|------|------------------------------------|

 $A_{CP}(B^+ \rightarrow K^+ \pi^0 \pi^0)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

NODE=S041CU4
NODE=S041CU4

| | | | | |
|---|------|-----|------|------------------------------------|
| $-0.06 \pm 0.06 \pm 0.04$ | LEES | 11I | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|------|-----|------|------------------------------------|

 $A_{CP}(B^+ \rightarrow K^0 \rho^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

NODE=S041CR9
NODE=S041CR9

| | | | | |
|---|--------|-----|------|------------------------------------|
| $-0.12 \pm 0.17 \pm 0.02$ | AUBERT | 07Z | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|--------|-----|------|------------------------------------|

 $A_{CP}(B^+ \rightarrow K^{*+} \pi^+ \pi^-)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

NODE=S041AKP
NODE=S041AKP

| | | | | |
|--|----------|-----|------|------------------------------------|
| $0.07 \pm 0.07 \pm 0.04$ | AUBERT,B | 06U | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--|----------|-----|------|------------------------------------|

 $A_{CP}(B^+ \rightarrow \rho^0 K^*(892)^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------|-------------|------|---------|
|-------|-------------|------|---------|

NODE=S041AZ1
NODE=S041AZ1

| | | | |
|--|-----------------|------|------------------------------------|
| $0.31 \pm 0.13 \pm 0.03$ | DEL-AMO-SA..11D | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--|-----------------|------|------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | | |
|---------------------------------|--------|-----|------|------------------------------|
| $0.20^{+0.32}_{-0.29} \pm 0.04$ | AUBERT | 03V | BABR | Repl. by DEL-AMO-SANCHEZ 11D |
|---------------------------------|--------|-----|------|------------------------------|

$A_{CP}(B^+ \rightarrow K^*(892)^+ f_0(980))$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-----------------|------|------------------------------------|
| $-0.15 \pm 0.12 \pm 0.03$ | DEL-AMO-SA..11D | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| $-0.34 \pm 0.21 \pm 0.03$ | AUBERT,B | 06G | BABR Repl. by DEL-AMO-SANCHEZ 11D |

NODE=S041CR3
 NODE=S041CR3

 $A_{CP}(B^+ \rightarrow a_1^+ K^0)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------|-------------|------|---|
| $+0.12 \pm 0.11 \pm 0.02$ | AUBERT | 08F | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CS1
 NODE=S041CS1

 $A_{CP}(B^+ \rightarrow b_1^+ K^0)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------|-------------|------|---|
| $-0.03 \pm 0.15 \pm 0.02$ | AUBERT | 08AG | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CS6
 NODE=S041CS6

 $A_{CP}(B^+ \rightarrow K^*(892)^0 \rho^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------|-------------|------|---|
| $-0.01 \pm 0.16 \pm 0.02$ | AUBERT,B | 06G | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CR4
 NODE=S041CR4

 $A_{CP}(B^+ \rightarrow b_1^0 K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------|-------------|------|---|
| $-0.46 \pm 0.20 \pm 0.02$ | AUBERT | 07BI | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CS2
 NODE=S041CS2

 $A_{CP}(B^+ \rightarrow K^0 K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------|------|---------|
| 0.04 ± 0.14 OUR AVERAGE [0.12 ± 0.18 OUR 2012 AVERAGE] | | | |

NODE=S041CQ8
 NODE=S041CQ8
 NEW

| | | | |
|---|------------------------|-----|---|
| $0.014 \pm 0.168 \pm 0.002$ | DUH | 13 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $0.10 \pm 0.26 \pm 0.03$ | ¹ AUBERT,BE | 06C | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| $0.13 \begin{smallmatrix} +0.23 \\ -0.24 \end{smallmatrix} \pm 0.02$ | LIN | 07 | BELL Repl. by DUH 13 |
| $0.15 \pm 0.33 \pm 0.03$ | ² AUBERT,BE | 05E | BABR Repl. by AUBERT,BE 06C |

¹ Corresponds to 90% confidence range $-0.31 < A_{CP} < 0.54$.

² Corresponds to 90% confidence range $-0.43 < A_{CP} < 0.68$.

NODE=S041CQ8;LINKAGE=AE
 NODE=S041CQ8;LINKAGE=AU

 $A_{CP}(B^+ \rightarrow K^+ K_S^0 K_S^0)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---------|
| $0.04 \begin{smallmatrix} +0.04 \\ -0.05 \end{smallmatrix} \pm 0.02$ OUR AVERAGE [-0.04 ± 0.11 OUR 2012 AVERAGE] | | | |

NODE=S041AY8
 NODE=S041AY8

| | | | |
|--|------|-----|---|
| $0.04 \begin{smallmatrix} +0.04 \\ -0.05 \end{smallmatrix} \pm 0.02$ | LEES | 120 | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|--|------|-----|---|

NEW

| | | | |
|---|-----------------------|-----|------------------------|
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| $-0.04 \pm 0.11 \pm 0.02$ | ¹ AUBERT,B | 04V | BABR Repl. by LEES 120 |
| ¹ Corresponds to 90% confidence range $-0.23 < A_{CP} < 0.15$. | | | |

NODE=S041AY8;LINKAGE=AU

 $A_{CP}(B^+ \rightarrow K^+ K^- \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------|------|---|
| $0.00 \pm 0.10 \pm 0.03$ | AUBERT | 07BB | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CKK
 NODE=S041CKK

 $A_{CP}(B^+ \rightarrow K^+ K^- K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------|------|---------|
| $-0.017 \begin{smallmatrix} +0.024 \\ -0.020 \end{smallmatrix} \pm 0.014$ OUR AVERAGE [-0.017 ± 0.030 OUR 2012 AVERAGE] | | | |

NODE=S041AY7
 NODE=S041AY7

| | | | |
|---|-------------------|-----|---|
| $-0.017 \begin{smallmatrix} +0.019 \\ -0.014 \end{smallmatrix} \pm 0.014$ | ¹ LEES | 120 | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
|---|-------------------|-----|---|

NEW

| | | | |
|---|--------|-----|--------------------------|
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| $-0.017 \pm 0.026 \pm 0.015$ | AUBERT | 060 | BABR Repl. by LEES 120 |
| $0.02 \pm 0.07 \pm 0.03$ | AUBERT | 03M | BABR Repl. by AUBERT 060 |

¹ All intermediate charmonium and charm resonances are removed, except of χ_{c0} .

NODE=S041AY7;LINKAGE=LE

$A_{CP}(B^+ \rightarrow \phi K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|---------------------|----------|------------------------------------|
| 0.10 ± 0.04 OUR AVERAGE | | | |
| [-0.01 ± 0.06 OUR 2012 AVERAGE] | | | |
| 0.128 ± 0.044 ± 0.013 | LEES | 120 BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| -0.07 ± 0.17 $\begin{smallmatrix} +0.03 \\ -0.02 \end{smallmatrix}$ | ACOSTA | 05J CDF | $p\bar{p}$ at 1.96 TeV |
| 0.01 ± 0.12 ± 0.05 | ¹ CHEN | 03B BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | |
| 0.00 ± 0.08 ± 0.02 | AUBERT | 06O BABR | Repl. by LEES 120 |
| 0.04 ± 0.09 ± 0.01 | ² AUBERT | 04A BABR | Repl. by AUBERT 06O |
| -0.05 ± 0.20 ± 0.03 | ³ AUBERT | 02E BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Corresponds to 90% confidence range $-0.20 < A_{CP} < 0.22$.² Corresponds to 90% confidence range $-0.10 < A_{CP} < 0.18$.³ Corresponds to 90% confidence range $-0.37 < A_{CP} < 0.28$.NODE=S041AX7
NODE=S041AX7
NEWNODE=S041AX7;LINKAGE=CH
NODE=S041AX7;LINKAGE=AU
NODE=S041AX7;LINKAGE=AY **$A_{CP}(B^+ \rightarrow X_0(1550) K^+)$**

| VALUE | DOCUMENT ID | TECN | COMMENT |
|----------------------------|---------------------|----------|------------------------------------|
| -0.04 ± 0.07 ± 0.02 | ¹ AUBERT | 06O BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ Measured in the $B^+ \rightarrow K^+ K^- K^+$ decay.NODE=S041CXK
NODE=S041CXK

NODE=S041CXK;LINKAGE=AU

 $A_{CP}(B^+ \rightarrow K^{*+} K^+ K^-)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------|-------------|----------|------------------------------------|
| 0.11 ± 0.08 ± 0.03 | AUBERT,B | 06U BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AKK
NODE=S041AKK **$A_{CP}(B^+ \rightarrow \phi K^*(892)^+)$**

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|---------------------|-----------|------------------------------------|
| -0.01 ± 0.08 OUR AVERAGE | | | |
| 0.00 ± 0.09 ± 0.04 | AUBERT | 07BA BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| -0.02 ± 0.14 ± 0.03 | ¹ CHEN | 05A BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | |
| 0.16 ± 0.17 ± 0.03 | AUBERT | 03V BABR | Repl. by AUBERT 07BA |
| -0.13 ± 0.29 $\begin{smallmatrix} +0.08 \\ -0.11 \end{smallmatrix}$ | ² CHEN | 03B BELL | Repl. by CHEN 05A |
| -0.43 $\begin{smallmatrix} +0.36 \\ -0.30 \end{smallmatrix}$ ± 0.06 | ³ AUBERT | 02E BABR | Repl. by AUBERT 03V |

¹ Corresponds to 90% confidence range $-0.25 < A_{CP} < 0.22$.² Corresponds to 90% confidence range $-0.64 < A_{CP} < 0.36$.³ Corresponds to 90% confidence range $-0.88 < A_{CP} < 0.18$.NODE=S041AX8
NODE=S041AX8NODE=S041AX8;LINKAGE=CE
NODE=S041AX8;LINKAGE=CH
NODE=S041AX8;LINKAGE=AY **$A_{CP}(B^+ \rightarrow \phi(K\pi)_0^{*+})$**

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------|-------------|-----------|------------------------------------|
| 0.04 ± 0.15 ± 0.04 | AUBERT | 08BI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CT1
NODE=S041CT1 **$A_{CP}(B^+ \rightarrow \phi K_1(1270)^+)$**

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------|-------------|-----------|------------------------------------|
| 0.15 ± 0.19 ± 0.05 | AUBERT | 08BI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CS8
NODE=S041CS8 **$A_{CP}(B^+ \rightarrow \phi K_2^*(1430)^+)$**

| VALUE | DOCUMENT ID | TECN | COMMENT |
|----------------------------|-------------|-----------|------------------------------------|
| -0.23 ± 0.19 ± 0.06 | AUBERT | 08BI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CS9
NODE=S041CS9 **$A_{CP}(B^+ \rightarrow K^+ \phi \phi)$**

| VALUE | DOCUMENT ID | TECN | COMMENT |
|----------------------------|-------------------|----------|------------------------------------|
| -0.10 ± 0.08 ± 0.02 | ¹ LEES | 11A BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ $m_{\phi\phi} < 2.85 \text{ GeV}/c^2$.NODE=S041CT9
NODE=S041CT9

NODE=S041CT9;LINKAGE=LE

 $A_{CP}(B^+ \rightarrow K^+[\phi\phi]_{\eta_c})$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---------------------------|-------------------|----------|------------------------------------|
| 0.09 ± 0.10 ± 0.02 | ¹ LEES | 11A BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

¹ $m_{\phi\phi}$ is consistent with η_c mass [2.94, 3.02] GeV/ c^2 .NODE=S041CTB
NODE=S041CTB

NODE=S041CTB;LINKAGE=LE

 $A_{CP}(B^+ \rightarrow K^*(892)^+ \gamma)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------------------------------|-------------|-----------|------------------------------------|
| +0.018 ± 0.028 ± 0.007 | AUBERT | 09AO BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AKG
NODE=S041AKG

$A_{CP}(B^+ \rightarrow \eta K^+ \gamma)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-----------------------|------|---|
| -0.12 ± 0.07 OUR AVERAGE | | | |
| $-0.09 \pm 0.10 \pm 0.01$ | ¹ AUBERT | 09 | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $-0.16 \pm 0.09 \pm 0.06$ | ² NISHIDA | 05 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| $-0.09 \pm 0.12 \pm 0.01$ | ¹ AUBERT,B | 06M | BABR Repl. by AUBERT 09 |
| ¹ $m_{\eta K} < 3.25 \text{ GeV}/c^2$. | | | |
| ² $m_{\eta K} < 2.4 \text{ GeV}/c^2$ | | | |

NODE=S041CQ3
 NODE=S041CQ3

NODE=S041CQ3;LINKAGE=AR
 NODE=S041CQ3;LINKAGE=NI

 $A_{CP}(B^+ \rightarrow \phi K^+ \gamma)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------|------|---|
| -0.13 ± 0.11 OUR AVERAGE | | | Error includes scale factor of 1.1. |
| $-0.03 \pm 0.11 \pm 0.08$ | SAHOO | 11A | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $-0.26 \pm 0.14 \pm 0.05$ | AUBERT | 07Q | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041APK
 NODE=S041APK

 $A_{CP}(B^+ \rightarrow \rho^+ \gamma)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---|
| $-0.11 \pm 0.32 \pm 0.09$ | TANIGUCHI | 08 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CS7
 NODE=S041CS7

 $A_{CP}(B^+ \rightarrow \pi^+ \pi^0)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|---------------------|------|---|
| 0.03 ± 0.04 OUR AVERAGE | | | |
| [0.06 ± 0.05 OUR 2012 AVERAGE] | | | |
| $0.025 \pm 0.043 \pm 0.007$ | DUH | 13 | BELL $e^+ e^- \rightarrow \Upsilon(4S)$ |
| $0.03 \pm 0.08 \pm 0.01$ | AUBERT | 07BC | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| $0.07 \pm 0.06 \pm 0.01$ | LIN | 08 | BELL Repl. by DUH 13 |
| $-0.01 \pm 0.10 \pm 0.02$ | ¹ AUBERT | 05L | BABR Repl. by AUBERT 07BC |
| $0.00 \pm 0.10 \pm 0.02$ | ² CHAO | 05A | BELL Repl. by CHAO 04B |
| $-0.02 \pm 0.10 \pm 0.01$ | ³ CHAO | 04B | BELL Repl. by LIN 08 |
| $-0.03 \begin{smallmatrix} +0.18 \\ -0.17 \end{smallmatrix} \pm 0.02$ | ⁴ AUBERT | 03L | BABR Repl. by AUBERT 05L |
| $0.30 \pm 0.30 \begin{smallmatrix} +0.06 \\ -0.04 \end{smallmatrix}$ | ⁵ CASEY | 02 | BELL Repl. by CHAO 04B |

NODE=S041AX0
 NODE=S041AX0
 NEW

¹ Corresponds to a 90% CL interval of $-0.19 < A_{CP} < 0.21$.

² Corresponds to a 90% CL interval of $-0.17 < A_{CP} < 0.16$.

³ This corresponds to 90% CL interval of $-0.18 < A_{CP} < 0.14$.

⁴ Corresponds to 90% confidence range $-0.32 < A_{CP} < 0.27$.

⁵ Corresponds to 90% confidence range $-0.23 < A_{CP} < +0.86$.

NODE=S041AX0;LINKAGE=AU
 NODE=S041AX0;LINKAGE=CO
 NODE=S041AX0;LINKAGE=CH
 NODE=S041AX0;LINKAGE=3L
 NODE=S041AX0;LINKAGE=CA

 $A_{CP}(B^+ \rightarrow \pi^+ \pi^- \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------|------|---|
| $0.032 \pm 0.044 \begin{smallmatrix} +0.040 \\ -0.037 \end{smallmatrix}$ | AUBERT | 09L | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| $-0.007 \pm 0.077 \pm 0.025$ | AUBERT,B | 05G | BABR Repl. by AUBERT 09L |
| $-0.39 \pm 0.33 \pm 0.12$ | AUBERT | 03M | BABR Repl. by AUBERT 05G |

NODE=S041AY5
 NODE=S041AY5

 $A_{CP}(B^+ \rightarrow \rho^0 \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------|------|---|
| $0.18 \pm 0.07 \begin{smallmatrix} +0.05 \\ -0.15 \end{smallmatrix}$ | AUBERT | 09L | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| $-0.074 \pm 0.120 \begin{smallmatrix} +0.035 \\ -0.055 \end{smallmatrix}$ | AUBERT,B | 05G | BABR Repl. by AUBERT 09L |
| $-0.19 \pm 0.11 \pm 0.02$ | AUBERT | 04Z | BABR Repl. by AUBERT,B 05G |

NODE=S041CP4
 NODE=S041CP4

 $A_{CP}(B^+ \rightarrow f_2(1270) \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------|------|---|
| $0.41 \pm 0.25 \begin{smallmatrix} +0.18 \\ -0.15 \end{smallmatrix}$ | AUBERT | 09L | BABR $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| $-0.004 \pm 0.247 \begin{smallmatrix} +0.028 \\ -0.032 \end{smallmatrix}$ | AUBERT,B | 05G | BABR Repl. by AUBERT 09L |

NODE=S041CQ0
 NODE=S041CQ0

$A_{CP}(B^+ \rightarrow \rho^0(1450)\pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|----------------------------------|-------------|------|--|
| $-0.06 \pm 0.28^{+0.23}_{-0.40}$ | AUBERT | 09L | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CT4
 NODE=S041CT4

 $A_{CP}(B^+ \rightarrow f_0(1370)\pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|------|--|
| $0.72 \pm 0.15 \pm 0.16$ | AUBERT | 09L | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CT5
 NODE=S041CT5

 $A_{CP}(B^+ \rightarrow \pi^+\pi^-\pi^+ \text{ nonresonant})$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|----------------------------------|-------------|------|--|
| $-0.14 \pm 0.14^{+0.18}_{-0.08}$ | AUBERT | 09L | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CT6
 NODE=S041CT6

 $A_{CP}(B^+ \rightarrow \rho^+\pi^0)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|--|
| 0.02 ± 0.11 OUR AVERAGE | | | |
| $-0.01 \pm 0.13 \pm 0.02$ | AUBERT | 07X | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |
| $0.06 \pm 0.17^{+0.04}_{-0.05}$ | ZHANG | 05A | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CP5
 NODE=S041CP5

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|--------------------------|--------|-----|--------------------------|
| $0.24 \pm 0.16 \pm 0.06$ | AUBERT | 04Z | BABR Repl. by AUBERT 07X |
|--------------------------|--------|-----|--------------------------|

 $A_{CP}(B^+ \rightarrow \rho^+\rho^0)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------|------|--|
| -0.05 ± 0.05 OUR AVERAGE | | | |
| $-0.054 \pm 0.055 \pm 0.010$ | AUBERT | 09G | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |
| $0.00 \pm 0.22 \pm 0.03$ | ZHANG | 03B | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AY9
 NODE=S041AY9

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|---------------------------|-----------|-----|-----------------------------|
| $-0.12 \pm 0.13 \pm 0.10$ | AUBERT,BE | 06G | BABR Repl. by AUBERT 09G |
| $-0.19 \pm 0.23 \pm 0.03$ | AUBERT | 03V | BABR Repl. by AUBERT,BE 06G |

 $A_{CP}(B^+ \rightarrow \omega\pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------------|------|--|
| -0.04 ± 0.06 OUR AVERAGE | | | |
| $-0.02 \pm 0.08 \pm 0.01$ | AUBERT | 07AE | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |
| $-0.02 \pm 0.09 \pm 0.01$ | JEN | 06 | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |
| -0.34 ± 0.25 | ¹ CHEN | 00 | CLE2 $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AX6
 NODE=S041AX6

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|----------------------------------|---------------------|-----|----------------------------|
| $-0.01 \pm 0.10 \pm 0.01$ | AUBERT,B | 06E | BABR Repl. by AUBERT 07AE |
| $0.03 \pm 0.16 \pm 0.01$ | AUBERT | 04H | BABR Repl. by AUBERT,B 06E |
| $0.50^{+0.23}_{-0.20} \pm 0.02$ | ² WANG | 04A | BELL Repl. by JEN 06 |
| $-0.01^{+0.29}_{-0.31} \pm 0.03$ | ³ AUBERT | 02E | BABR Repl. by AUBERT 04H |

¹ Corresponds to 90% confidence range $-0.75 < A_{CP} < 0.07$.

² Corresponds to 90% CL interval $-0.25 < A_{CP} < 0.41$

³ Corresponds to 90% confidence range $-0.50 < A_{CP} < 0.46$.

NODE=S041AX6;LINKAGE=A
 NODE=S041AX6;LINKAGE=WA
 NODE=S041AX6;LINKAGE=AY

 $A_{CP}(B^+ \rightarrow \omega\rho^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|--|
| $-0.20 \pm 0.09 \pm 0.02$ | AUBERT | 09H | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|--------------------------|----------|-----|----------------------------|
| $0.04 \pm 0.18 \pm 0.02$ | AUBERT,B | 06T | BABR Repl. by AUBERT 09H |
| $0.05 \pm 0.26 \pm 0.02$ | AUBERT | 05O | BABR Repl. by AUBERT,B 06T |

NODE=S041CP9
 NODE=S041CP9

 $A_{CP}(B^+ \rightarrow \eta\pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------------------------------|------|--|
| -0.14 ± 0.07 OUR AVERAGE | Error includes scale factor of 1.4. | | |
| $-0.19 \pm 0.06 \pm 0.01$ | HOI | 12 | BELL $e^+e^- \rightarrow \Upsilon(4S)$ |
| $-0.03 \pm 0.09 \pm 0.03$ | AUBERT | 09AV | BABR $e^+e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

| | | | |
|---------------------------|----------|------|----------------------------|
| $-0.08 \pm 0.10 \pm 0.01$ | AUBERT | 07AE | BABR Repl. by AUBERT 09AV |
| $-0.23 \pm 0.09 \pm 0.02$ | CHANG | 07B | BELL Repl. by HOI 12 |
| $-0.13 \pm 0.12 \pm 0.01$ | AUBERT,B | 05K | BABR Repl. by AUBERT 07AE |
| $0.07 \pm 0.15 \pm 0.03$ | CHANG | 05A | BELL Repl. by CHANG 07B |
| $-0.44 \pm 0.18 \pm 0.01$ | AUBERT | 04H | BABR Repl. by AUBERT,B 05K |

NODE=S041CP2
 NODE=S041CP2

$A_{CP}(B^+ \rightarrow \eta \rho^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|-----------|------------------------------------|
| 0.11±0.11 OUR AVERAGE | | | |
| 0.13±0.11±0.02 | AUBERT | 08AH BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| -0.04 ^{+0.34} _{-0.32} ±0.01 | WANG | 07B BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| 0.02±0.18±0.02 | AUBERT,B | 05K BABR | Repl. by AUBERT 08AH |

NODE=S041CQ2
 NODE=S041CQ2

 $A_{CP}(B^+ \rightarrow \eta' \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|-----------|------------------------------------|
| 0.06±0.16 OUR AVERAGE | | | |
| 0.03±0.17±0.02 | AUBERT | 09AV BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| 0.20 ^{+0.37} _{-0.36} ±0.04 | SCHUEMANN | 06 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| 0.21±0.17±0.01 | AUBERT | 07AE BABR | Repl. by AUBERT 09AV |
| 0.14±0.16±0.01 | AUBERT,B | 05K BABR | Repl. by AUBERT 07AE |

NODE=S041CQ1
 NODE=S041CQ1

 $A_{CP}(B^+ \rightarrow \eta' \rho^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|---------------------|----------|------------------------------------|
| 0.26±0.17±0.02 | DEL-AMO-SA..10A | BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| 0.04±0.28±0.02 | ¹ AUBERT | 07E BABR | Repl. by DEL-AMO-SANCHEZ 10A |

NODE=S041CR8
 NODE=S041CR8

¹ Reports A_{CP} with the opposite sign convention.

NODE=S041CR8;LINKAGE=OS

 $A_{CP}(B^+ \rightarrow b_1^0 \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------|-------------|-----------|------------------------------------|
| +0.05±0.16±0.02 | AUBERT | 07BI BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CS3
 NODE=S041CS3

 $A_{CP}(B^+ \rightarrow p \bar{p} \pi^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|------------------|-----------|------------------------------------|
| 0.00±0.04 OUR AVERAGE | | | |
| -0.02±0.05±0.02 | ¹ WEI | 08 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| +0.04±0.07±0.04 | AUBERT | 07AV BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| -0.16±0.22±0.01 | WANG | 04 BELL | Repl. by WEI 08 |
| ¹ Requires $m_{p\bar{p}} < 2.85 \text{ GeV}/c^2$. | | | |

NODE=S041CP6
 NODE=S041CP6

NODE=S041CP6;LINKAGE=WE

 $A_{CP}(B^+ \rightarrow p \bar{p} K^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-----------------------|----------|------------------------------------|
| -0.16±0.07 OUR AVERAGE | | | |
| -0.17±0.10±0.02 | ¹ WEI | 08 BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| -0.16 ^{+0.07} _{-0.08} ±0.04 | ¹ AUBERT,B | 05L BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| -0.05±0.11±0.01 | WANG | 04 BELL | Repl. by WEI 08 |
| ¹ Requires $m_{p\bar{p}} < 2.85 \text{ GeV}/c^2$. | | | |

NODE=S041CP7
 NODE=S041CP7

NODE=S041CP7;LINKAGE=WE

 $A_{CP}(B^+ \rightarrow p \bar{p} K^*(892)^+)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-------------------------------------|-----------|------------------------------------|
| 0.21±0.16 OUR AVERAGE | Error includes scale factor of 1.4. | | |
| -0.01±0.19±0.02 | CHEN | 08C BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |
| +0.32±0.13±0.05 | AUBERT | 07AV BABR | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041AW6
 NODE=S041AW6

 $A_{CP}(B^+ \rightarrow p \bar{\Lambda} \gamma)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------|-------------|----------|------------------------------------|
| +0.17±0.16±0.05 | WANG | 07C BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CLG
 NODE=S041CLG

 $A_{CP}(B^+ \rightarrow p \bar{\Lambda} \pi^0)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------|-------------|----------|------------------------------------|
| +0.01±0.17±0.04 | WANG | 07C BELL | $e^+ e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CS0
 NODE=S041CS0

$A_{CP}(B^+ \rightarrow K^+ \ell^+ \ell^-)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|--|-------------------|----------|-----------------------------------|
| -0.02±0.08 OUR AVERAGE | | | |
| [-0.01 ± 0.09 OUR 2012 AVERAGE Scale factor = 1.1] | | | |
| -0.03±0.14±0.01 | ¹ LEES | 12S BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| -0.18±0.18±0.01 | AUBERT | 09T BABR | $e^+e^- \rightarrow \Upsilon(4S)$ |
| +0.04±0.10±0.02 | WEI | 09A BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

-0.07±0.22±0.02 AUBERT,B 06J BABR Repl. by AUBERT 09T

¹ Measured in the union of $0.10 < q^2 < 8.12 \text{ GeV}^2/c^4$ and $q^2 > 10.11 \text{ GeV}^2/c^4$.

LEES 12S reports also individual measurements $A_{CP}(B^+ \rightarrow K^+ \ell^+ \ell^-) = 0.02 \pm 0.18 \pm 0.01$ for $0.10 < q^2 < 8.12 \text{ GeV}^2/c^4$ and $A_{CP}(B^+ \rightarrow K^+ \ell^+ \ell^-) = -0.06^{+0.22}_{-0.21} \pm 0.01$ for $q^2 > 10.11 \text{ GeV}^2/c^4$.

NODE=S041CR1
NODE=S041CR1
NEW

NODE=S041CR1;LINKAGE=LE

 $A_{CP}(B^+ \rightarrow K^+ e^+ e^-)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------|-------------|----------|-----------------------------------|
| +0.14±0.14±0.03 | WEI | 09A BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CU0
NODE=S041CU0

 $A_{CP}(B^+ \rightarrow K^+ \mu^+ \mu^-)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------|-------------|----------|-----------------------------------|
| =0.05±0.13±0.03 | WEI | 09A BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CU1
NODE=S041CU1

 $A_{CP}(B^+ \rightarrow K^{*+} \ell^+ \ell^-)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|-------------------------------|-------------|------|---------|
| -0.09±0.14 OUR AVERAGE | | | |

0.01^{+0.26}_{-0.24} ± 0.02 AUBERT 09T BABR $e^+e^- \rightarrow \Upsilon(4S)$

-0.13^{+0.17}_{-0.16} ± 0.01 WEI 09A BELL $e^+e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.03±0.23±0.03 AUBERT,B 06J BABR Repl. by AUBERT 09T

NODE=S041CR2
NODE=S041CR2

 $A_{CP}(B^+ \rightarrow K^* e^+ e^-)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|---|-------------|----------|-----------------------------------|
| -0.14^{+0.23}_{-0.22} ± 0.02 | WEI | 09A BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CU2
NODE=S041CU2

 $A_{CP}(B^+ \rightarrow K^* \mu^+ \mu^-)$

| VALUE | DOCUMENT ID | TECN | COMMENT |
|------------------------|-------------|----------|-----------------------------------|
| -0.12±0.24±0.02 | WEI | 09A BELL | $e^+e^- \rightarrow \Upsilon(4S)$ |

NODE=S041CU3
NODE=S041CU3

 $\gamma(B^+ \rightarrow D^{(*)0} K^{(*)+})$

For angle $\gamma(\phi_3)$ of the CKM unitarity triangle, see the review on "CP Violation" in the Reviews section.

| VALUE (°) | CL% | DOCUMENT ID | TECN | COMMENT |
|-------------------------------|-----|-------------|------|---------|
| 72 ± 11 OUR AVERAGE | | | | |
| [(73 ± 10)° OUR 2012 AVERAGE] | | | | |

69 ⁺¹⁷₋₁₆ ¹ LEES 13B BABR $e^+e^- \rightarrow \Upsilon(4S)$

44 ⁺⁴³₋₃₈ ^{2,3} AAIJ 12AQ LHCB pp at 7 TeV

78.4^{+10.8}_{-11.6} ± 9.6 ⁴ POLUEKTOV 10 BELL $e^+e^- \rightarrow \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

77.3^{+15.1}_{-14.9} ± 5.9 ^{3,5} AIHARA 12 BELL $e^+e^- \rightarrow \Upsilon(4S)$

68 ± 14 ± 5 ⁶ DEL-AMO-SA..10F BABR Repl. by LEES 13B

7 to 173 95 ⁷ DEL-AMO-SA..10G BABR $e^+e^- \rightarrow \Upsilon(4S)$

76 ⁺²²₋₂₃ ± 7.1 ⁸ AUBERT 08AL BABR Repl. by DEL-AMO-SANCHEZ 10F

53 ⁺¹⁵₋₁₈ ± 10 ⁹ POLUEKTOV 06 BELL Repl. by POLUEKTOV 10

70 ± 31 ⁺¹⁸₋₁₅ ¹⁰ AUBERT,B 05Y BABR Repl. by AUBERT 08AL

77 ⁺¹⁷₋₁₉ ± 17 ¹¹ POLUEKTOV 04 BELL Repl. by POLUEKTOV 06

NODE=S041GAM
NODE=S041GAM
NODE=S041GAM
NEW

- ¹ Reports combination of published measurements using GGSZ, GLW, and ADS methods. Reports also 2σ range of $41\text{--}102^\circ$ and a 5.9σ significance for $\gamma(B^+ \rightarrow D^{(*)0} K^{(*)+}) \neq 0$ hypothesis.
- ² Reports combined statistical and systematic uncertainties.
- ³ Uses binned Dalitz plot of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ decays from $B^+ \rightarrow \bar{D}^0 K^+$. Measurement of strong phases in $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ Dalitz plot from LIBBY 10 is used as input.
- ⁴ Uses Dalitz plot analysis of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ decays from $B^+ \rightarrow D^{(*)} K^+$ modes. The corresponding two standard deviation interval for γ is $54.2^\circ < \gamma < 100.5^\circ$. CP conservation in the combined result is ruled out with a significance of 3.5 standard deviations.
- ⁵ We combined the systematics in quadrature. The authors report separately the contribution to the systematic uncertainty due to the uncertainty on the bin-averaged strong phase difference between D^0 and \bar{D}^0 amplitudes.
- ⁶ Uses Dalitz plot analysis of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$, $K_S^0 K^+ K^-$ decays from $B^+ \rightarrow D^{(*)} K^+$, DK^{*+} modes. The corresponding two standard deviation interval for γ is $39^\circ < \gamma < 98^\circ$. CP conservation in the combined result is ruled out with a significance of 3.5 standard deviations.
- ⁷ Reports confidence intervals for the CKM angle γ from the measured values of the GLW parameters using $B^\pm \rightarrow DK^\pm$ decays with D mesons decaying to non-CP($K\pi$), CP-even ($K^+ K^-$, $\pi^+ \pi^-$), and CP-odd ($K_S^0 \pi^0$, $K_S^0 \omega$) states.
- ⁸ Uses Dalitz plot analysis of $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ and $\bar{D}^0 \rightarrow K_S^0 K^+ K^-$ decays coming from $B^\pm \rightarrow D^{(*)} K^{(*)\pm}$ modes. The corresponding two standard deviation interval is $29^\circ < \gamma < 122^\circ$.
- ⁹ Uses a Dalitz plot analysis of the $\bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$ decays; Combines the DK^+ , $D^* K^+$ and DK^{*+} modes. The corresponding two standard deviations interval for gamma is $8^\circ < \gamma < 111^\circ$.
- ¹⁰ Uses a Dalitz plot analysis of neutral $D \rightarrow K_S^0 \pi^+ \pi^-$ decays coming from $B^\pm \rightarrow DK^\pm$ and $B^\pm \rightarrow D^{*0} K^\pm$ followed by $D^{*0} \rightarrow D\pi^0$, $D\gamma$. The corresponding two standard deviations interval for gamma is $12^\circ < \gamma < 137^\circ$. AUBERT,B 05Y also reports the amplitude ratios and the strong phases.
- ¹¹ Uses a Dalitz plot analysis of the 3-body $D \rightarrow K_S^0 \pi^+ \pi^-$ decays coming from $B^\pm \rightarrow DK^\pm$ and $B^\pm \rightarrow D^* K^\pm$ followed by $D^* \rightarrow D\pi^0$; here we use D to denote that the neutral D meson produced in the decay is an admixture of D^0 and \bar{D}^0 . The corresponding two standard deviations interval for γ is $26^\circ < \gamma < 126^\circ$. POLUEKTOV 04 also reports the amplitude ratios and the strong phases.

NODE=S041GAM;LINKAGE=LE

NODE=S041GAM;LINKAGE=AA
NODE=S041GAM;LINKAGE=AH

NODE=S041GAM;LINKAGE=PU

NODE=S041GAM;LINKAGE=AI

NODE=S041GAM;LINKAGE=DE

NODE=S041GAM;LINKAGE=DA

NODE=S041GAM;LINKAGE=AB

NODE=S041GAM;LINKAGE=PL

NODE=S041GAM;LINKAGE=AU

NODE=S041GAM;LINKAGE=PO

PARTIAL BRANCHING FRACTIONS IN $B^+ \rightarrow K^{(*)+} \ell^+ \ell^-$

NODE=S041240

$B(B^+ \rightarrow K^{*+} \ell^+ \ell^-) (q^2 < 2.0 \text{ GeV}^2/c^4)$

NODE=S041PB1
NODE=S041PB1
NEW

| VALUE (units 10^{-7}) | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---------|
| 1.4 \pm 0.5 OUR AVERAGE | | | |
| [(1.3 \pm 1.0) $\times 10^{-7}$ OUR 2012 AVERAGE] | | | |

| | | | |
|--|----------|-----------|------------------------|
| 1.37 ^{+0.60} _{-0.58} | AAIJ | 12AH LHCB | pp at 7 TeV |
| 1.30 \pm 0.98 \pm 0.14 | AALTONEN | 11AI CDF | $p\bar{p}$ at 1.96 TeV |

$B(B^+ \rightarrow K^{*+} \ell^+ \ell^-) (2.0 < q^2 < 4.3 \text{ GeV}^2/c^4)$

NODE=S041PB2
NODE=S041PB2
NEW

| VALUE (units 10^{-7}) | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---------|
| 1.1 \pm 0.5 OUR AVERAGE | | | |
| [(1 \pm 1) $\times 10^{-7}$ OUR 2012 AVERAGE] | | | |

| | | | |
|--|----------|-----------|------------------------|
| 1.24 ^{+0.60} _{-0.55} | AAIJ | 12AH LHCB | pp at 7 TeV |
| 0.71 \pm 1.00 \pm 0.15 | AALTONEN | 11AI CDF | $p\bar{p}$ at 1.96 TeV |

$B(B^+ \rightarrow K^{*+} \ell^+ \ell^-) (4.3 < q^2 < 8.68 \text{ GeV}^2/c^4)$

NODE=S041PB3
NODE=S041PB3

| VALUE (units 10^{-7}) | DOCUMENT ID | TECN | COMMENT |
|--|-------------|------|---------|
| 2.4 \pm 0.8 -0.7 OUR AVERAGE | | | |
| [(1.7 \pm 1.7) $\times 10^{-7}$ OUR 2012 AVERAGE] | | | |

NEW

| | | | |
|--|----------|-----------|------------------------|
| 2.50 ^{+0.88} _{-0.74} | AAIJ | 12AH LHCB | pp at 7 TeV |
| 1.71 \pm 1.58 \pm 0.49 | AALTONEN | 11AI CDF | $p\bar{p}$ at 1.96 TeV |

$B(B^+ \rightarrow K^{*+} \ell^+ \ell^-) (10.09 < q^2 < 12.86 \text{ GeV}^2/c^4)$

NODE=S041PB4
NODE=S041PB4
NEW

| VALUE (units 10^{-7}) | DOCUMENT ID | TECN | COMMENT |
|---|-------------|------|---------|
| 2.1 \pm 0.6 OUR AVERAGE | | | |
| [(2.0 \pm 1.0) $\times 10^{-7}$ OUR 2012 AVERAGE] | | | |

| | | | |
|--|----------|-----------|------------------------|
| 2.13 ^{+0.72} _{-0.66} | AAIJ | 12AH LHCB | pp at 7 TeV |
| 1.97 \pm 0.99 \pm 0.22 | AALTONEN | 11AI CDF | $p\bar{p}$ at 1.96 TeV |

$B(B^+ \rightarrow K^{*+} \ell^+ \ell^-)$ ($14.18 < q^2 < 16.0 \text{ GeV}^2/c^4$)

| <u>VALUE (units 10^{-7})</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---|--------------------|-------------|----------------|
|---|--------------------|-------------|----------------|

NODE=S041PB5
NODE=S041PB5

 $0.86^{+0.40}_{-0.32}$ OUR AVERAGE

NEW

[(0.5 ± 0.6) $\times 10^{-7}$ OUR 2012 AVERAGE]

| | | | |
|--------------------------|----------|-----------|------------------------|
| $1.00^{+0.47}_{-0.38}$ | AAIJ | 12AH LHCB | pp at 7 TeV |
| $0.52 \pm 0.61 \pm 0.09$ | AALTONEN | 11AI CDF | $p\bar{p}$ at 1.96 TeV |

 $B(B^+ \rightarrow K^{*+} \ell^+ \ell^-)$ ($q^2 > 16.0 \text{ GeV}^2/c^4$)

| <u>VALUE (units 10^{-7})</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---|--------------------|-------------|----------------|
|---|--------------------|-------------|----------------|

NODE=S041PB6
NODE=S041PB6

 1.3 ± 0.4 OUR AVERAGE

NEW

[(1.6 ± 1.0) $\times 10^{-7}$ OUR 2012 AVERAGE]

| | | | |
|--------------------------|----------|-----------|------------------------|
| 1.25 ± 0.46 | AAIJ | 12AH LHCB | pp at 7 TeV |
| $1.57 \pm 0.96 \pm 0.17$ | AALTONEN | 11AI CDF | $p\bar{p}$ at 1.96 TeV |

 $B(B^+ \rightarrow K^{*+} \ell^+ \ell^-)$ ($1.0 < q^2 < 6.0 \text{ GeV}^2/c^4$)

| <u>VALUE (units 10^{-7})</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---|--------------------|-------------|----------------|
|---|--------------------|-------------|----------------|

NODE=S041PB7
NODE=S041PB7

 2.8 ± 0.8 OUR AVERAGE

NEW

[(2.6 ± 1.7) $\times 10^{-7}$ OUR 2012 AVERAGE]

| | | | |
|--------------------------|----------|-----------|------------------------|
| $2.90^{+0.90}_{-0.85}$ | AAIJ | 12AH LHCB | pp at 7 TeV |
| $2.57 \pm 1.61 \pm 0.40$ | AALTONEN | 11AI CDF | $p\bar{p}$ at 1.96 TeV |

 $B(B^+ \rightarrow K^{*+} \ell^+ \ell^-)$ ($0.0 < q^2 < 4.3 \text{ GeV}^2/c^4$)

| <u>VALUE (units 10^{-7})</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---|--------------------|-------------|----------------|
|---|--------------------|-------------|----------------|

NODE=S041PB8
NODE=S041PB8

 $2.01 \pm 1.39 \pm 0.27$

| | | |
|----------|----------|------------------------|
| AALTONEN | 11AI CDF | $p\bar{p}$ at 1.96 TeV |
|----------|----------|------------------------|

 $B(B^+ \rightarrow K^+ \ell^+ \ell^-)$ ($q^2 < 2.0 \text{ GeV}^2/c^4$)

| <u>VALUE (units 10^{-7})</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---|--------------------|-------------|----------------|
|---|--------------------|-------------|----------------|

NODE=S041PB9
NODE=S041PB9

0.51 ± 0.08 OUR AVERAGE Error includes scale factor of 1.5. [(0.36 ± 0.11) $\times 10^{-7}$ OUR 2012 AVERAGE]

NEW

| | | | |
|-----------------------------|----------|----------|------------------------|
| $0.556 \pm 0.053 \pm 0.027$ | AAIJ | 13H LHCB | pp at 7 TeV |
| $0.36 \pm 0.11 \pm 0.03$ | AALTONEN | 11AI CDF | $p\bar{p}$ at 1.96 TeV |

 $B(B^+ \rightarrow K^+ \ell^+ \ell^-)$ ($2.0 < q^2 < 4.3 \text{ GeV}^2/c^4$)

| <u>VALUE (units 10^{-7})</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---|--------------------|-------------|----------------|
|---|--------------------|-------------|----------------|

NODE=S041PBA
NODE=S041PBA

0.60 ± 0.07 OUR AVERAGE Error includes scale factor of 1.3. [(0.80 ± 0.16) $\times 10^{-7}$ OUR 2012 AVERAGE]

NEW

| | | | |
|-----------------------------|----------|----------|------------------------|
| $0.573 \pm 0.053 \pm 0.023$ | AAIJ | 13H LHCB | pp at 7 TeV |
| $0.80 \pm 0.15 \pm 0.05$ | AALTONEN | 11AI CDF | $p\bar{p}$ at 1.96 TeV |

 $B(B^+ \rightarrow K^+ \ell^+ \ell^-)$ ($4.3 < q^2 < 8.68 \text{ GeV}^2/c^4$)

| <u>VALUE (units 10^{-7})</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---|--------------------|-------------|----------------|
|---|--------------------|-------------|----------------|

NODE=S041PBB
NODE=S041PBB

 1.03 ± 0.07 OUR AVERAGE

NEW

[(1.18 ± 0.21) $\times 10^{-7}$ OUR 2012 AVERAGE]

| | | | |
|-----------------------------|----------|----------|------------------------|
| $1.003 \pm 0.070 \pm 0.039$ | AAIJ | 13H LHCB | pp at 7 TeV |
| $1.18 \pm 0.19 \pm 0.09$ | AALTONEN | 11AI CDF | $p\bar{p}$ at 1.96 TeV |

 $B(B^+ \rightarrow K^+ \ell^+ \ell^-)$ ($10.09 < q^2 < 12.86 \text{ GeV}^2/c^4$)

| <u>VALUE (units 10^{-7})</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---|--------------------|-------------|----------------|
|---|--------------------|-------------|----------------|

NODE=S041PBC
NODE=S041PBC

 0.58 ± 0.05 OUR AVERAGE

NEW

[(0.68 ± 0.13) $\times 10^{-7}$ OUR 2012 AVERAGE]

| | | | |
|-----------------------------|----------|----------|------------------------|
| $0.565 \pm 0.050 \pm 0.022$ | AAIJ | 13H LHCB | pp at 7 TeV |
| $0.68 \pm 0.12 \pm 0.05$ | AALTONEN | 11AI CDF | $p\bar{p}$ at 1.96 TeV |

 $B(B^+ \rightarrow K^+ \ell^+ \ell^-)$ ($14.18 < q^2 < 16.0 \text{ GeV}^2/c^4$)

| <u>VALUE (units 10^{-7})</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---|--------------------|-------------|----------------|
|---|--------------------|-------------|----------------|

NODE=S041PBD
NODE=S041PBD

0.40 ± 0.05 OUR AVERAGE Error includes scale factor of 1.4. [(0.53 ± 0.10) $\times 10^{-7}$ OUR 2012 AVERAGE]

NEW

| | | | |
|-----------------------------|----------|----------|------------------------|
| $0.377 \pm 0.036 \pm 0.015$ | AAIJ | 13H LHCB | pp at 7 TeV |
| $0.53 \pm 0.10 \pm 0.03$ | AALTONEN | 11AI CDF | $p\bar{p}$ at 1.96 TeV |

 $B(B^+ \rightarrow K^+ \ell^+ \ell^-)$ ($16.0 < q^2 < 18.0 \text{ GeV}^2/c^4$)

| <u>VALUE (units 10^{-7})</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---|--------------------|-------------|----------------|
|---|--------------------|-------------|----------------|

NODE=S041PBH
NODE=S041PBH

 $0.354 \pm 0.036 \pm 0.018$

| | | |
|------|----------|---------------|
| AAIJ | 13H LHCB | pp at 7 TeV |
|------|----------|---------------|

$B(B^+ \rightarrow K^+ \ell^+ \ell^-)$ ($18.0 < q^2 < 22.0 \text{ GeV}^2/c^4$)

| VALUE (units 10^{-7}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|----------|---------------------|
| 0.312±0.040±0.016 | AAIJ | 13H LHCb | $p\bar{p}$ at 7 TeV |

NODE=S041PBI
 NODE=S041PBI

 $B(B^+ \rightarrow K^+ \ell^+ \ell^-)$ ($16.0 < q^2 < 22.0 \text{ GeV}^2/c^4$)

| VALUE (units 10^{-7}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|----------|------------------------------|
| 0.48±0.11±0.03 | AALTONEN | 11AI CDF | $\rho\bar{\rho}$ at 1.96 TeV |

NODE=S041PBE
 NODE=S041PBE

 $B(B^+ \rightarrow K^+ \ell^+ \ell^-)$ ($1.0 < q^2 < 6.0 \text{ GeV}^2/c^4$)

| VALUE (units 10^{-7}) | DOCUMENT ID | TECN | COMMENT |
|---|-------------|----------|------------------------------|
| 1.25 ±0.10 OUR AVERAGE | | | |
| [(1.41 ± 0.22) × 10 ⁻⁷ OUR 2012 AVERAGE] | | | |
| 1.205±0.085±0.070 | AAIJ | 13H LHCb | $p\bar{p}$ at 7 TeV |
| 1.41 ±0.20 ±0.10 | AALTONEN | 11AI CDF | $\rho\bar{\rho}$ at 1.96 TeV |

NODE=S041PBF
 NODE=S041PBF
 NEW

 $B(B^+ \rightarrow K^+ \ell^+ \ell^-)$ ($0.0 < q^2 < 4.3 \text{ GeV}^2/c^4$)

| VALUE (units 10^{-7}) | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-------------|----------|------------------------------|
| 1.13±0.19±0.08 | AALTONEN | 11AI CDF | $\rho\bar{\rho}$ at 1.96 TeV |

NODE=S041PBG
 NODE=S041PBG

 B^\pm REFERENCES

| | | | | |
|---------------|------|------------------------|----------------------------------|-----------------|
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| AAIJ | 13R | JHEP 1302 043 | R. Aaij <i>et al.</i> | (LHCb Collab.) |
| DUH | 13 | PR D87 031103 | Y. T. Duh <i>et al.</i> | (Belle) |
| HARA | 13 | PRL 110 131801 | K. Hara <i>et al.</i> | (BELLE Collab.) |
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| AAIJ | 12AA | PR D85 091103 | R. Aaij <i>et al.</i> | (LHCb Collab.) |
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| AAIJ | 12AH | JHEP 1207 133 | R. Aaij <i>et al.</i> | (LHCb Collab.) |
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| AAIJ | 12AY | JHEP 1212 125 | R. Aaij <i>et al.</i> | (LHCb Collab.) |
| AAIJ | 12C | PRL 108 101601 | R. Aaij <i>et al.</i> | (LHCb Collab.) |
| AAIJ | 12E | PL B708 241 | R. Aaij <i>et al.</i> | (LHCb Collab.) |
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| AAIJ | 12M | PL B712 203 | R. Aaij <i>et al.</i> | (LHCb Collab.) |
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| DEL-AMO-SA... | 12 | PR D85 092017 | P. del Amo Sanchez <i>et al.</i> | (BABAR Collab.) |
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| LEES | 12B | PR D85 052003 | J.P. Lees <i>et al.</i> | (BABAR Collab.) |
| LEES | 12D | PRL 109 101802 | J.P. Lees <i>et al.</i> | (BABAR Collab.) |
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| LEES | 12O | PR D85 112010 | J.P. Lees <i>et al.</i> | (BABAR Collab.) |
| LEES | 12P | PR D86 012004 | J.P. Lees <i>et al.</i> | (BABAR Collab.) |
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| LEES | 12Z | PR D86 091102 | J.P. Lees <i>et al.</i> | (BABAR Collab.) |
| STYPULA | 12 | PR D86 072007 | J. Stypula <i>et al.</i> | (BELLE Collab.) |
| AAIJ | 11E | PR D84 092001 | R. Aaij <i>et al.</i> | (LHCb Collab.) |
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| AALTONEN | 11 | PRL 106 121804 | T. Aaltonen <i>et al.</i> | (CDF Collab.) |
| AALTONEN | 11AI | PRL 107 201802 | T. Aaltonen <i>et al.</i> | (CDF Collab.) |
| AALTONEN | 11AJ | PR D84 091504 | T. Aaltonen <i>et al.</i> | (CDF Collab.) |
| AALTONEN | 11B | PR D83 032008 | T. Aaltonen <i>et al.</i> | (CDF Collab.) |
| AALTONEN | 11L | PRL 106 161801 | T. Aaltonen <i>et al.</i> | (CDF Collab.) |
| AUSHEV | 11 | PR D83 051102 | T. Aushev <i>et al.</i> | (BELLE Collab.) |
| BHARDWAJ | 11 | PRL 107 091803 | V. Bhardwaj <i>et al.</i> | (BELLE Collab.) |
| CHEN | 11F | PR D84 071501 | P. Chen <i>et al.</i> | (BELLE Collab.) |
| CHOI | 11 | PR D84 052004 | S.-K. Choi <i>et al.</i> | (BELLE Collab.) |
| DEL-AMO-SA... | 11B | PR D83 032004 | P. del Amo Sanchez <i>et al.</i> | (BABAR Collab.) |
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| GULER | 11 | PR D83 032005 | H. Guler <i>et al.</i> | (BELLE Collab.) |
| HORII | 11 | PRL 106 231803 | Y. Horii <i>et al.</i> | (BELLE Collab.) |
| LEES | 11A | PR D84 012001 | J.P. Lees <i>et al.</i> | (BABAR Collab.) |
| LEES | 11D | PR D84 012002 | J.P. Lees <i>et al.</i> | (BABAR Collab.) |
| LEES | 11I | PR D84 092007 | J.P. Lees <i>et al.</i> | (BABAR Collab.) |
| SAHOO | 11A | PR D84 071101 | H. Sahoo <i>et al.</i> | (BELLE Collab.) |
| SEON | 11 | PR D84 071106 | O. Seon <i>et al.</i> | (BELLE Collab.) |
| VINOKUROVA | 11 | PL B706 139 | A. Vinokurova <i>et al.</i> | (BELLE Collab.) |
| AALTONEN | 10A | PR D81 031105 | T. Aaltonen <i>et al.</i> | (CDF Collab.) |
| AUBERT | 10 | PRL 104 011802 | B. Aubert <i>et al.</i> | (BABAR Collab.) |
| AUBERT | 10D | PR D81 052009 | B. Aubert <i>et al.</i> | (BABAR Collab.) |
| AUBERT | 10E | PR D81 051101 | B. Aubert <i>et al.</i> | (BABAR Collab.) |
| AUSHEV | 10 | PR D81 031103 | T. Aushev <i>et al.</i> | (BELLE Collab.) |
| BOZEK | 10 | PR D82 072005 | A. BOZEK <i>et al.</i> | (BELLE Collab.) |
| DEL-AMO-SA... | 10A | PR D82 011502 | P. del Amo Sanchez <i>et al.</i> | (BABAR Collab.) |
| DEL-AMO-SA... | 10B | PR D82 011101 | P. del Amo Sanchez <i>et al.</i> | (BABAR Collab.) |
| DEL-AMO-SA... | 10F | PRL 105 121801 | P. del Amo Sanchez <i>et al.</i> | (BABAR Collab.) |
| DEL-AMO-SA... | 10G | PR D82 072004 | P. del Amo Sanchez <i>et al.</i> | (BABAR Collab.) |
| DEL-AMO-SA... | 10H | PR D82 072006 | P. del Amo Sanchez <i>et al.</i> | (BABAR Collab.) |

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| LIBBY 10 | PR D82 112006 | J. Libby <i>et al.</i> | (CLEO Collab.) | REFID=53583 |
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| SAKAI 10 | PR D82 091104 | K. Sakai <i>et al.</i> | (BELLE Collab.) | REFID=53473 |
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| AUBERT,B | 06T | PR D74 051102 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=51324 |
| AUBERT,B | 06U | PR D74 051104 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=51325 |
| AUBERT,B | 06Y | PR D74 091105 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=51498 |
| AUBERT,BE | 06A | PR D74 099903 (errata.) | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=51506 |
| AUBERT,BE | 06C | PRL 97 171805 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=51436 |
| AUBERT,BE | 06G | PRL 97 261801 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=51570 |
| AUBERT,BE | 06H | PRL 97 261803 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=51571 |
| AUBERT,BE | 06J | PR D74 111102 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=51586 |
| AUBERT,BE | 06M | PR D74 071101 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=51454 |
| CHISTOV | 06A | PR D74 111105 | R. Chistov <i>et al.</i> | (BELLE Collab.) | REFID=51588 |
| FANG | 06 | PR D74 012007 | F. Fang <i>et al.</i> | (BELLE Collab.) | REFID=51159 |
| GABYSHEV | 06 | PRL 97 202003 | N. Gabyshev <i>et al.</i> | (BELLE Collab.) | REFID=51488 |
| GABYSHEV | 06A | PRL 97 242001 | N. Gabyshev <i>et al.</i> | (BELLE Collab.) | REFID=51565 |
| GARMASH | 06 | PRL 96 251803 | A. Garmash <i>et al.</i> | (BELLE Collab.) | REFID=51162 |
| GOKHROO | 06 | PRL 97 162002 | G. Gokhroo <i>et al.</i> | (BELLE Collab.) | REFID=51432 |
| IKADO | 06 | PRL 97 251802 | K. Ikado <i>et al.</i> | (BELLE Collab.) | REFID=51572 |
| JEN | 06 | PR D74 111101 | C.-M. Jen <i>et al.</i> | (BELLE Collab.) | REFID=51573 |
| KUMAR | 06 | PR D74 051103 | R. Kumar <i>et al.</i> | (BELLE Collab.) | REFID=51338 |
| MOHAPATRA | 06 | PRL 96 221601 | D. Mohapatra <i>et al.</i> | (BELLE Collab.) | REFID=51235 |
| POLUEKTOV | 06 | PR D73 112009 | A. Poluektov <i>et al.</i> | (BELLE Collab.) | REFID=51287 |
| SCHUEMANN | 06 | PRL 97 061802 | J. Schuemann <i>et al.</i> | (BELLE Collab.) | REFID=51250 |
| SONI | 06 | PL B634 155 | N. Soni <i>et al.</i> | (BELLE Collab.) | REFID=51093 |
| ABE | 05A | PRL 94 221805 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=50755 |
| ABE | 05B | PR D71 072003 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=50517 |
| Also | | PR D71 079903 (errata.) | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=50555 |
| ABE | 05G | PRL 95 231802 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=50936 |
| ACOSTA | 05J | PRL 95 031801 | D. Acosta <i>et al.</i> | (CDF Collab.) | REFID=50685 |
| AUBERT | 05 | PRL 94 011801 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50366 |
| AUBERT | 05B | PR D71 031501 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50498 |
| AUBERT | 05G | PR D72 032004 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50572 |
| AUBERT | 05H | PRL 94 101801 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50581 |
| AUBERT | 05J | PRL 94 141801 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50590 |
| AUBERT | 05K | PRL 94 171801 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50591 |
| AUBERT | 05L | PRL 94 181802 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50593 |
| AUBERT | 05M | PRL 94 191802 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50606 |
| AUBERT | 05N | PR D71 031102 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50616 |
| AUBERT | 05O | PR D71 031103 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50617 |
| AUBERT | 05R | PR D71 071103 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50627 |
| AUBERT | 05U | PR D71 091103 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50635 |
| AUBERT | 05X | PR D71 111101 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50662 |
| AUBERT,B | 05B | PRL 95 041804 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50688 |
| AUBERT,B | 05E | PR D72 011102 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50701 |
| AUBERT,B | 05G | PR D72 052002 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50775 |
| AUBERT,B | 05K | PRL 95 131803 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50826 |
| AUBERT,B | 05L | PR D72 051101 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50827 |
| AUBERT,B | 05N | PR D72 072003 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50838 |
| Also | | PR D74 099903 (errata.) | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=51506 |
| AUBERT,B | 05O | PR D72 051102 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50892 |
| AUBERT,B | 05T | PR D72 071102 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50898 |
| AUBERT,B | 05U | PR D72 071103 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50897 |
| AUBERT,B | 05V | PR D72 071104 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50900 |
| AUBERT,B | 05Y | PRL 95 121802 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50919 |
| AUBERT,BE | 05E | PRL 95 221801 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50948 |
| CHANG | 05 | PR D71 072007 | M.-C. Chang <i>et al.</i> | (BELLE Collab.) | REFID=50631 |

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| CHANG | 05A | PR D71 091106 | P. Chang <i>et al.</i> | (BELLE Collab.) | REFID=50638 |
| CHAO | 05A | PR D71 031502 | Y. Chao <i>et al.</i> | (BELLE Collab.) | REFID=50619 |
| CHEN | 05A | PRL 94 221804 | K.-F. Chen <i>et al.</i> | (BELLE Collab.) | REFID=50659 |
| GARMASH | 05 | PR D71 092003 | A. Garmash <i>et al.</i> | (BELLE Collab.) | REFID=50641 |
| ITOH | 05 | PRL 95 091601 | R. Itoh <i>et al.</i> | (BELLE Collab.) | REFID=50559 |
| LEE | 05 | PRL 95 061802 | Y.-J. Lee <i>et al.</i> | (BELLE Collab.) | REFID=50696 |
| LIVENTSEV | 05 | PR D72 051109 | D. Liventsev <i>et al.</i> | (BELLE Collab.) | REFID=50903 |
| MAJUMDER | 05 | PRL 95 041803 | G. Majumder <i>et al.</i> | (BELLE Collab.) | REFID=50689 |
| MOHAPATRA | 05 | PR D72 011101 | D. Mohapatra <i>et al.</i> | (BELLE Collab.) | REFID=50700 |
| NISHIDA | 05 | PL B610 23 | S. Nishida <i>et al.</i> | (BELLE Collab.) | REFID=50596 |
| OKABE | 05 | PL B614 27 | T. Okabe <i>et al.</i> | (BELLE Collab.) | REFID=50601 |
| SAIGO | 05 | PRL 94 091601 | M. Saigo <i>et al.</i> | (BELLE Collab.) | REFID=50579 |
| WANG | 05A | PL B617 141 | M.-Z. Wang <i>et al.</i> | (BELLE Collab.) | REFID=50651 |
| XIE | 05 | PR D72 051105 | Q.L. Xie <i>et al.</i> | (BELLE Collab.) | REFID=50902 |
| YANG | 05 | PRL 94 111802 | H. Yang <i>et al.</i> | (BELLE Collab.) | REFID=50585 |
| ZHANG | 05A | PRL 94 031801 | J. Zhang <i>et al.</i> | (BELLE Collab.) | REFID=50486 |
| ZHANG | 05B | PR D71 091107 | L.M. Zhang <i>et al.</i> | (BELLE Collab.) | REFID=50639 |
| ZHANG | 05D | PRL 95 141801 | J. Zhang <i>et al.</i> | (BELLE Collab.) | REFID=50825 |
| ABDALLAH | 04E | EPJ C33 307 | J. Abdallah <i>et al.</i> | (DELPHI Collab.) | REFID=49917 |
| ABE | 04D | PR D69 112002 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=50011 |
| AUBERT | 04A | PR D69 011102 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=49719 |
| AUBERT | 04C | PRL 92 111801 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=49670 |
| AUBERT | 04H | PRL 92 061801 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=49867 |
| AUBERT | 04K | PRL 92 141801 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=49926 |
| AUBERT | 04M | PRL 92 201802 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=49928 |
| AUBERT | 04N | PRL 92 202002 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=49929 |
| AUBERT | 04O | PRL 92 221803 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=49930 |
| AUBERT | 04P | PRL 92 241802 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=49931 |
| AUBERT | 04Q | PR D69 051101 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=49954 |
| AUBERT | 04T | PR D69 071103 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=49958 |
| AUBERT | 04Y | PRL 93 041801 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=49997 |
| AUBERT | 04Z | PRL 93 051802 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50001 |
| AUBERT,B | 04B | PR D70 011101 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50043 |
| AUBERT,B | 04D | PR D70 032006 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50051 |
| AUBERT,B | 04L | PRL 93 131804 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50087 |
| AUBERT,B | 04P | PR D70 092001 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50193 |
| AUBERT,B | 04S | PRL 93 181801 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50195 |
| AUBERT,B | 04U | PR D70 091105 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50241 |
| AUBERT,B | 04V | PRL 93 181805 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50265 |
| AUBERT,BE | 04 | PR D70 111102 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50371 |
| AUBERT,BE | 04A | PR D70 112006 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50377 |
| AUBERT,BE | 04B | PR D70 091106 | B. Aubert <i>et al.</i> | (BABAR Collab.) | REFID=50416 |
| CHAO | 04 | PR D69 111102 | Y. Chao <i>et al.</i> | (BELLE Collab.) | REFID=50006 |
| CHAO | 04B | PRL 93 191802 | Y. Chao <i>et al.</i> | (BELLE Collab.) | REFID=50272 |
| CHISTOV | 04 | PRL 93 051803 | R. Chistov <i>et al.</i> | (BELLE Collab.) | REFID=50002 |
| DRUTSKOY | 04 | PRL 92 051801 | A. Drutskoy <i>et al.</i> | (BELLE Collab.) | REFID=49717 |
| GARMASH | 04 | PR D69 012001 | A. Garmash <i>et al.</i> | (BELLE Collab.) | REFID=49642 |
| LEE | 04 | PRL 93 211801 | Y.-J. Lee <i>et al.</i> | (BELLE Collab.) | REFID=50276 |
| MAJUMDER | 04 | PR D70 111103 | G. Majumder <i>et al.</i> | (BELLE Collab.) | REFID=50372 |
| NAKAO | 04 | PR D69 112001 | M. Nakao <i>et al.</i> | (BELLE Collab.) | REFID=50010 |
| POLUEKTOV | 04 | PR D70 072003 | A. Poluektov <i>et al.</i> | (BELLE Collab.) | REFID=50223 |
| SCHWANDA | 04 | PRL 93 131803 | C. Schwanda <i>et al.</i> | (BELLE Collab.) | REFID=50086 |
| WANG | 04 | PRL 92 131801 | M.Z. Wang <i>et al.</i> | (BELLE Collab.) | REFID=49936 |
| WANG | 04A | PR D70 012001 | C.H. Wang <i>et al.</i> | (BELLE Collab.) | REFID=50045 |
| ZANG | 04 | PR D69 017101 | S.L. Zang <i>et al.</i> | (BELLE Collab.) | REFID=49637 |
| ABE | 03B | PR D67 032003 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=49205 |
| ABE | 03D | PRL 90 131803 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=49220 |
| ADAM | 03 | PR D67 032001 | N.E. Adam <i>et al.</i> | (CLEO Collab.) | REFID=49204 |
| ADAM | 03B | PR D68 012004 | N.E. Adam <i>et al.</i> | (CLEO Collab.) | REFID=49507 |
| ATHAR | 03 | PR D68 072003 | S.B. Athar <i>et al.</i> | (CLEO Collab.) | REFID=49666 |
| AUBERT | 03K | PRL 90 231801 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=49439 |
| AUBERT | 03L | PRL 91 021801 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=49493 |
| AUBERT | 03M | PRL 91 051801 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=49513 |
| AUBERT | 03O | PRL 91 071801 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=49515 |
| AUBERT | 03U | PRL 91 221802 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=49648 |
| AUBERT | 03V | PRL 91 171802 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=49663 |
| AUBERT | 03W | PRL 91 161801 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=49664 |
| AUBERT | 03X | PR D68 092001 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=49665 |
| BORNHEIM | 03 | PR D68 052002 | A. Bornheim <i>et al.</i> | (CLEO Collab.) | REFID=49546 |
| CHEN | 03B | PRL 91 201801 | K.-F. Chen <i>et al.</i> | (BELLE Collab.) | REFID=49639 |
| CHOI | 03 | PRL 91 262001 | S.-K. Choi <i>et al.</i> | (BELLE Collab.) | REFID=49628 |
| CSORNA | 03 | PR D67 112002 | S.E. Csorna <i>et al.</i> | (CLEO Collab.) | REFID=49435 |
| EDWARDS | 03 | PR D68 011102 | K.W. Edwards <i>et al.</i> | (CLEO Collab.) | REFID=49504 |
| FANG | 03 | PRL 90 071801 | F. Fang <i>et al.</i> | (BELLE Collab.) | REFID=49206 |
| HUANG | 03 | PRL 91 241802 | H.-C. Huang <i>et al.</i> | (BELLE Collab.) | REFID=49621 |
| ISHIKAWA | 03 | PRL 91 261601 | A. Ishikawa <i>et al.</i> | (BELLE Collab.) | REFID=49641 |
| KROKOVNY | 03B | PRL 91 262002 | P. Krokovny <i>et al.</i> | (BELLE Collab.) | REFID=49615 |
| SWAIN | 03 | PR D68 051101 | S.K. Swain <i>et al.</i> | (BELLE Collab.) | REFID=49545 |
| UNNO | 03 | PR D68 011103 | Y. Unno <i>et al.</i> | (BELLE Collab.) | REFID=49505 |
| ZHANG | 03B | PRL 91 221801 | J. Zhang <i>et al.</i> | (BELLE Collab.) | REFID=49634 |
| ABE | 02 | PRL 88 021801 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=48518 |
| ABE | 02B | PRL 88 031802 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=48520 |
| ABE | 02H | PRL 88 171801 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=48633 |
| ABE | 02K | PRL 88 181803 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=48690 |
| ABE | 02N | PL B538 11 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=48769 |
| ABE | 02O | PR D65 091103 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=48790 |
| ABE | 02W | PRL 89 151802 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=48980 |
| ACOSTA | 02C | PR D65 092009 | D. Acosta <i>et al.</i> | (CDF Collab.) | REFID=48794 |
| ACOSTA | 02F | PR D66 052005 | D. Acosta <i>et al.</i> | (CDF Collab.) | REFID=48998 |
| AHMED | 02B | PR D66 031101 | S. Ahmed <i>et al.</i> | (CLEO Collab.) | REFID=48901 |
| AUBERT | 02 | PR D65 032001 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=48514 |
| AUBERT | 02C | PRL 88 101805 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=48600 |
| AUBERT | 02E | PR D65 051101 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=48636 |
| AUBERT | 02F | PR D65 091101 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=48637 |
| AUBERT | 02L | PRL 88 241801 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=48751 |
| BRIERE | 02 | PRL 89 081803 | R. Briere <i>et al.</i> | (CLEO Collab.) | REFID=48758 |

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| CASEY | 02 | PR D66 092002 | B.C.K. Casey <i>et al.</i> | (BELLE Collab.) | REFID=49071 |
| CHEN | 02B | PL B546 196 | K.-F. Chen <i>et al.</i> | (BELLE Collab.) | REFID=48992 |
| DRUTSKOY | 02 | PL B542 171 | A. Drutskoy <i>et al.</i> | (BELLE Collab.) | REFID=48780 |
| DYTMAN | 02 | PR D66 091101 | S.A. Dytman <i>et al.</i> | (CLEO Collab.) | REFID=49070 |
| ECKHART | 02 | PRL 89 251801 | E. Eckhart <i>et al.</i> | (CLEO Collab.) | REFID=49080 |
| EDWARDS | 02B | PR D65 111102 | K.W. Edwards <i>et al.</i> | (CLEO Collab.) | REFID=48799 |
| GABYSHEV | 02 | PR D66 091102 | N. Gabyshev <i>et al.</i> | (BELLE Collab.) | REFID=49102 |
| GARMASH | 02 | PR D65 092005 | A. Garmash <i>et al.</i> | (BELLE Collab.) | REFID=48634 |
| GODANG | 02 | PRL 88 021802 | R. Godang <i>et al.</i> | (CLEO Collab.) | REFID=48519 |
| GORDON | 02 | PL B542 183 | A. Gordon <i>et al.</i> | (BELLE Collab.) | REFID=48781 |
| LU | 02 | PRL 89 191801 | R.-S. Lu <i>et al.</i> | (BELLE Collab.) | REFID=48994 |
| MAHAPATRA | 02 | PRL 88 101803 | R. Mahapatra <i>et al.</i> | (CLEO Collab.) | REFID=48599 |
| NISHIDA | 02 | PRL 89 231801 | S. Nishida <i>et al.</i> | (BELLE Collab.) | REFID=49078 |
| ABE | 01H | PRL 87 101801 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=48247 |
| ABE | 01I | PRL 87 111801 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=48248 |
| ABE | 01K | PR D64 071101 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=48367 |
| ABE | 01L | PRL 87 161601 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=48379 |
| ABE | 01M | PL B517 309 | K. Abe <i>et al.</i> | (BELLE Collab.) | REFID=48382 |
| ALEXANDER | 01B | PR D64 092001 | J.P. Alexander <i>et al.</i> | (CLEO Collab.) | REFID=48391 |
| AMMAR | 01B | PRL 87 271801 | R. Ammar <i>et al.</i> | (CLEO Collab.) | REFID=48534 |
| ANDERSON | 01B | PRL 87 181803 | S. Anderson <i>et al.</i> | (CLEO Collab.) | REFID=48389 |
| AUBERT | 01D | PRL 87 151801 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=48377 |
| AUBERT | 01E | PRL 87 151802 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=48378 |
| AUBERT | 01F | PRL 87 201803 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=48432 |
| AUBERT | 01G | PRL 87 221802 | B. Aubert <i>et al.</i> | (BaBar Collab.) | REFID=48434 |
| BARATE | 01E | EPJ C19 213 | R. Barate <i>et al.</i> | (ALEPH Collab.) | REFID=48135 |
| BRIERE | 01 | PRL 86 3718 | R.A. Biere <i>et al.</i> | (CLEO Collab.) | REFID=48119 |
| BROWDER | 01 | PRL 86 2950 | T.E. Browder <i>et al.</i> | (CLEO Collab.) | REFID=48107 |
| EDWARDS | 01 | PRL 86 30 | K.W. Edwards <i>et al.</i> | (CLEO Collab.) | REFID=47903 |
| GRITSAN | 01 | PR D64 077501 | A. Gritsan <i>et al.</i> | (CLEO Collab.) | REFID=48373 |
| RICHICHI | 01 | PR D63 031103 | S.J. Richichi <i>et al.</i> | (CLEO Collab.) | REFID=48226 |
| ABBIENDI | 00B | PL B476 233 | G. Abbiendi <i>et al.</i> | (OPAL Collab.) | REFID=47437 |
| ABE | 00C | PR D62 071101 | K. Abe <i>et al.</i> | (SLD Collab.) | REFID=47762 |
| AHMED | 00B | PR D62 112003 | S. Ahmed <i>et al.</i> | (CLEO Collab.) | REFID=47822 |
| ANASTASSOV | 00 | PRL 84 1393 | A. Anastassov <i>et al.</i> | (CLEO Collab.) | REFID=47574 |
| BARATE | 00R | PL B492 275 | R. Barate <i>et al.</i> | (ALEPH Collab.) | REFID=47827 |
| BEHRENS | 00 | PR D61 052001 | B.H. Behrens <i>et al.</i> | (CLEO Collab.) | REFID=47558 |
| BONVICINI | 00 | PRL 84 5940 | G. Bonvicini <i>et al.</i> | (CLEO Collab.) | REFID=47650 |
| CHEN | 00 | PRL 85 525 | S. Chen <i>et al.</i> | (CLEO Collab.) | REFID=47669 |
| COAN | 00 | PRL 84 5283 | T.E. Coan <i>et al.</i> | (CLEO Collab.) | REFID=47633 |
| CRONIN-HENNESSY | 00 | PRL 85 515 | D. Cronin-Hennessy <i>et al.</i> | (CLEO Collab.) | REFID=47659 |
| CSORNA | 00 | PR D61 111101 | S.E. Csorna <i>et al.</i> | (CLEO Collab.) | REFID=47435 |
| JESSOP | 00 | PRL 85 2881 | C.P. Jessop <i>et al.</i> | (CLEO Collab.) | REFID=47771 |
| RICHICHI | 00 | PRL 85 520 | S.J. Richichi <i>et al.</i> | (CLEO Collab.) | REFID=47660 |
| ABBIENDI | 99J | EPJ C12 609 | G. Abbiendi <i>et al.</i> | (OPAL Collab.) | REFID=46738 |
| AFFOLDER | 99B | PRL 83 3378 | T. Affolder <i>et al.</i> | (CDF Collab.) | REFID=47213 |
| BARTELT | 99 | PRL 82 3746 | J. Bartelt <i>et al.</i> | (CLEO Collab.) | REFID=47004 |
| COAN | 99 | PR D59 111101 | T.E. Coan <i>et al.</i> | (CLEO Collab.) | REFID=47019 |
| ABE | 98B | PR D57 5382 | F. Abe <i>et al.</i> | (CDF Collab.) | REFID=45880 |
| ABE | 98O | PR D58 072001 | F. Abe <i>et al.</i> | (CDF Collab.) | REFID=46156 |
| ABE | 98Q | PR D58 092002 | F. Abe <i>et al.</i> | (CDF Collab.) | REFID=46475 |
| ACCIARRI | 98S | PL B438 417 | M. Acciarri <i>et al.</i> | (L3 Collab.) | REFID=46503 |
| ANASTASSOV | 98 | PRL 80 4127 | A. Anastassov <i>et al.</i> | (CLEO Collab.) | REFID=46015 |
| ATHANAS | 98 | PRL 80 5493 | M. Athanas <i>et al.</i> | (CLEO Collab.) | REFID=46113 |
| BARATE | 98Q | EPJ C4 387 | R. Barate <i>et al.</i> | (ALEPH Collab.) | REFID=46146 |
| BEHRENS | 98 | PRL 80 3710 | B.H. Behrens <i>et al.</i> | (CLEO Collab.) | REFID=45936 |
| BERGFELD | 98 | PRL 81 272 | T. Bergfeld <i>et al.</i> | (CLEO Collab.) | REFID=46091 |
| BRANDENBRUG | 98 | PRL 80 2762 | G. Brandenbrug <i>et al.</i> | (CLEO Collab.) | REFID=45874 |
| CAPRINI | 98 | NP B530 153 | I. Caprini, L. Lellouch, M. Neubert | (BCIP, CERN) | REFID=52699 |
| GODANG | 98 | PRL 80 3456 | R. Godang <i>et al.</i> | (CLEO Collab.) | REFID=45935 |
| ABE | 97J | PRL 79 590 | K. Abe <i>et al.</i> | (SLD Collab.) | REFID=45413 |
| ACCIARRI | 97F | PL B396 327 | M. Acciarri <i>et al.</i> | (L3 Collab.) | REFID=45317 |
| ARTUSO | 97 | PL B399 321 | M. Artuso <i>et al.</i> | (CLEO Collab.) | REFID=45327 |
| ATHANAS | 97 | PRL 79 2208 | M. Athanas <i>et al.</i> | (CLEO Collab.) | REFID=45598 |
| BROWDER | 97 | PR D56 11 | T. Browder <i>et al.</i> | (CLEO Collab.) | REFID=45431 |
| FU | 97 | PRL 79 3125 | X. Fu <i>et al.</i> | (CLEO Collab.) | REFID=45625 |
| JESSOP | 97 | PRL 79 4533 | C.P. Jessop <i>et al.</i> | (CLEO Collab.) | REFID=45744 |
| ABE | 96B | PR D53 3496 | F. Abe <i>et al.</i> | (CDF Collab.) | REFID=44688 |
| ABE | 96C | PRL 76 4462 | F. Abe <i>et al.</i> | (CDF Collab.) | REFID=44700 |
| ABE | 96H | PRL 76 2015 | F. Abe <i>et al.</i> | (CDF Collab.) | REFID=44798 |
| ABE | 96L | PRL 76 4675 | F. Abe <i>et al.</i> | (CDF Collab.) | REFID=44807 |
| ABE | 96Q | PR D54 6596 | F. Abe <i>et al.</i> | (CDF Collab.) | REFID=44974 |
| ABE | 96R | PRL 77 5176 | F. Abe <i>et al.</i> | (CDF Collab.) | REFID=45159 |
| ADAM | 96D | ZPHY C72 207 | W. Adam <i>et al.</i> | (DELPHI Collab.) | REFID=45276 |
| ALEXANDER | 96T | PRL 77 5000 | J.P. Alexander <i>et al.</i> | (CLEO Collab.) | REFID=44972 |
| ASNER | 96 | PR D53 1039 | D.M. Asner <i>et al.</i> | (CLEO Collab.) | REFID=44734 |
| BARISH | 96B | PRL 76 1570 | B.C. Barish <i>et al.</i> | (CLEO Collab.) | REFID=44693 |
| BERGFELD | 96B | PRL 77 4503 | T. Bergfeld <i>et al.</i> | (CLEO Collab.) | REFID=44956 |
| BISHAI | 96 | PL B369 186 | M. Bishai <i>et al.</i> | (CLEO Collab.) | REFID=44832 |
| BUSKULIC | 96J | ZPHY C71 31 | D. Buskulic <i>et al.</i> | (ALEPH Collab.) | REFID=44824 |
| GIBAUT | 96 | PR D53 4734 | D. Gibaut <i>et al.</i> | (CLEO Collab.) | REFID=44784 |
| PDG | 96 | PR D54 1 | R. M. Barnett <i>et al.</i> | | REFID=44495 |
| ABREU | 95N | PL B357 255 | P. Abreu <i>et al.</i> | (DELPHI Collab.) | REFID=44417 |
| ABREU | 95Q | ZPHY C68 13 | P. Abreu <i>et al.</i> | (DELPHI Collab.) | REFID=44460 |
| ADAM | 95 | ZPHY C68 363 | W. Adam <i>et al.</i> | (DELPHI Collab.) | REFID=44465 |
| AKERS | 95T | ZPHY C67 379 | R. Akers <i>et al.</i> | (OPAL Collab.) | REFID=44379 |
| ALBRECHT | 95D | PL B353 554 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) | REFID=44352 |
| ALEXANDER | 95 | PL B341 435 | J. Alexander <i>et al.</i> | (CLEO Collab.) | REFID=44113 |
| Also | | PL B347 469 (erratum) | J. Alexander <i>et al.</i> | (CLEO Collab.) | REFID=44211 |
| ARTUSO | 95 | PRL 75 785 | M. Artuso <i>et al.</i> | (CLEO Collab.) | REFID=44347 |
| BARISH | 95 | PR D51 1014 | B.C. Barish <i>et al.</i> | (CLEO Collab.) | REFID=44139 |
| BUSKULIC | 95 | PL B343 444 | D. Buskulic <i>et al.</i> | (ALEPH Collab.) | REFID=44119 |
| ABE | 94D | PRL 72 3456 | F. Abe <i>et al.</i> | (CDF Collab.) | REFID=43761 |
| ALAM | 94 | PR D50 43 | M.S. Alam <i>et al.</i> | (CLEO Collab.) | REFID=43738 |
| ALBRECHT | 94D | PL B335 526 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) | REFID=43962 |
| ATHANAS | 94 | PRL 73 3503 | M. Athanas <i>et al.</i> | (CLEO Collab.) | REFID=44064 |
| Also | | PRL 74 3090 (erratum) | M. Athanas <i>et al.</i> | (CLEO Collab.) | REFID=44196 |
| PDG | 94 | PR D50 1173 | L. Montanet <i>et al.</i> | (CERN, LBL, BOST+) | REFID=43653 |

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|------------|-----|---|----------------------------------|------------------------|-------------|
| STONE | 94 | HEPSY 93-11 | S. Stone | | REFID=43737 |
| | | Published in B Decays, 2nd Edition, World Scientific, Singapore | | | |
| ABREU | 93D | ZPHY C57 181 | P. Abreu <i>et al.</i> | (DELPHI Collab.) | REFID=43267 |
| ABREU | 93G | PL B312 253 | P. Abreu <i>et al.</i> | (DELPHI Collab.) | REFID=43443 |
| ACTON | 93C | PL B307 247 | P.D. Acton <i>et al.</i> | (OPAL Collab.) | REFID=43352 |
| ALBRECHT | 93E | ZPHY C60 11 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) | REFID=43514 |
| ALEXANDER | 93B | PL B319 365 | J. Alexander <i>et al.</i> | (CLEO Collab.) | REFID=43725 |
| AMMAR | 93 | PRL 71 674 | R. Ammar <i>et al.</i> | (CLEO Collab.) | REFID=43452 |
| BEAN | 93B | PRL 70 2681 | A. Bean <i>et al.</i> | (CLEO Collab.) | REFID=43356 |
| BUSKULIC | 93D | PL B307 194 | D. Buskulic <i>et al.</i> | (ALEPH Collab.) | REFID=43349 |
| | | Also PL B325 537 (erratum) | D. Buskulic <i>et al.</i> | (ALEPH Collab.) | REFID=43945 |
| SANGHERA | 93 | PR D47 791 | S. Sanghera <i>et al.</i> | (CLEO Collab.) | REFID=43098 |
| ALBRECHT | 92C | PL B275 195 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) | REFID=41928 |
| ALBRECHT | 92E | PL B277 209 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) | REFID=41985 |
| ALBRECHT | 92G | ZPHY C54 1 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) | REFID=42037 |
| BORTOLETTO | 92 | PR D45 21 | D. Bortoletto <i>et al.</i> | (CLEO Collab.) | REFID=41920 |
| BUSKULIC | 92G | PL B295 396 | D. Buskulic <i>et al.</i> | (ALEPH Collab.) | REFID=43142 |
| ALBRECHT | 91B | PL B254 288 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) | REFID=41451 |
| ALBRECHT | 91C | PL B255 297 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) | REFID=41454 |
| ALBRECHT | 91E | PL B262 148 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) | REFID=41549 |
| BERKELMAN | 91 | ARNPS 41 1 | K. Berkelman, S. Stone | (CORN, SYRA) | REFID=41929 |
| | | "Decays of B Mesons" | | | |
| FULTON | 91 | PR D43 651 | R. Fulton <i>et al.</i> | (CLEO Collab.) | REFID=41391 |
| ALBRECHT | 90B | PL B241 278 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) | REFID=41216 |
| ALBRECHT | 90J | ZPHY C48 543 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) | REFID=41437 |
| ANTREASYAN | 90B | ZPHY C48 553 | D. Antreasyan <i>et al.</i> | (Crystal Ball Collab.) | REFID=41438 |
| BORTOLETTO | 90 | PRL 64 2117 | D. Bortoletto <i>et al.</i> | (CLEO Collab.) | REFID=41178 |
| | | Also PR D45 21 | D. Bortoletto <i>et al.</i> | (CLEO Collab.) | REFID=41920 |
| WEIR | 90B | PR D41 1384 | A.J. Weir <i>et al.</i> | (Mark II Collab.) | REFID=41242 |
| ALBRECHT | 89G | PL B229 304 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) | REFID=40942 |
| AVERY | 89B | PL B223 470 | P. Avery <i>et al.</i> | (CLEO Collab.) | REFID=40820 |
| BEBEK | 89 | PRL 62 8 | C. Bebek <i>et al.</i> | (CLEO Collab.) | REFID=40626 |
| BORTOLETTO | 89 | PRL 62 2436 | D. Bortoletto <i>et al.</i> | (CLEO Collab.) | REFID=40787 |
| ALBRECHT | 88F | PL B209 119 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) | REFID=40649 |
| ALBRECHT | 88K | PL B215 424 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) | REFID=40662 |
| ALBRECHT | 87C | PL B185 218 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) | REFID=40323 |
| ALBRECHT | 87D | PL B199 451 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) | REFID=40325 |
| AVERY | 87 | PL B183 429 | P. Avery <i>et al.</i> | (CLEO Collab.) | REFID=40387 |
| BEBEK | 87 | PR D36 1289 | C. Bebek <i>et al.</i> | (CLEO Collab.) | REFID=40270 |
| ALAM | 86 | PR D34 3279 | M.S. Alam <i>et al.</i> | (CLEO Collab.) | REFID=40324 |
| PDG | 86 | PL 170B 1 | M. Aguilar-Benitez <i>et al.</i> | (CERN, CIT+) | REFID=40122 |
| GILES | 84 | PR D30 2279 | R. Giles <i>et al.</i> | (CLEO Collab.) | REFID=11570 |